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LONG CONTINUED, LOW GRADE, IDIOPATHIC FEVER

ANALYSIS OF ONE HUNDRED CASES

ARTHUR R. KINTNER, M.D.
MISSOULA, MONT.
AND
LEONARD G. ROWNTREE, M.D.
PHILADELPHIA

Undoubtedly every experienced clinician has at one time or another been baffled diagnostically or therapeutically by patients suffering from long continued, low grade fever of unknown origin. The patient, although not seriously ill, realizes that she is below par and, fearful lest the fever spells impending disaster, consults her family physician, insisting on cure of the fever or at least on knowing its cause. The subsequent story of most of these patients is similar. After considerable investigation, study, and futile therapy, the patient leaves her family physician and starts on the rounds of consultants and specialists. In the vast majority of instances she visits hospital after hospital, wasting her time and substance without obtaining either satisfaction or relief.

Such cases are not rare. A hundred of these patients were subjected to careful routine examination in the Mayo Clinic from June 1919 to June 1930 and, in addition, in most instances to a careful search for foci of infection by Dr. E. C. Rosenow or members of his staff without the cause of the fever being revealed. After relatively large numbers of them were seen it seemed desirable to hospitalize a group (twenty-three patients) and subject them to a specially devised routine study in order to ascertain whether or not, by more intensive investigation, the cause of the fever could be determined. In this group, in addition to repeated routine and special physical examinations, the chief of the clinical laboratory, Dr. A. H. Sanford, was called in consultation in not a few instances in order that he might obtain his tests under conditions that appealed to him as optimal for success. Such patients were subjected to agglutination tests, to blood and urine cultures, to stool examinations and to any and every other test suggested by the patient's history or physical examination. Only patients with laboratory manifestations that were normal or considered insignificant are included in this report.

Our purpose in this communication is to center medical attention on this group of unfortunate patients. One hundred cases are analyzed and an attempt is made to correlate the subsequent course and subsequent diagnosis with the condition observed at the clinic in order to ascertain the nature of the disease or syndrome, its onset, course, duration and outcome.

From the Mayo Clinic, the Western Montana Clinic, the Philadelphia Institute for Medical Research and the Philadelphia General Hospital.

FEVER AND ITS PATHOGENESIS

Fever has never been adequately defined. Barbour [1] describes it as "any positive heat balance due not solely to food, exercise or environment." According to the diagnostic standards of the National Tuberculosis Association, "a temperature which persistently runs over 99.4 F. when taken at least four times a day over a period of one week (by mouth five minutes) should be considered of significance and to constitute a fever." Kinghorn [2] believes that a temperature of 99 F. is significant of organic disease provided it is taken not too soon after meals and provided the patient is not nervously excited. We are of the opinion that in the adult a continuous mouth temperature of 99 or above represents fever whether or not the patient is nervous. Furthermore, we feel that it is wiser to investigate patients with continuous low grade fever than it is to ignore the temperature or to explain it away.

Obviously in investigating patients with fever it is desirable to keep in mind the theories of the mechanism of heat regulation in the body and the ordinary diurnal changes in temperature. In any consideration of heat regulation both its production and loss must be taken into account. The temperature as measured by the thermometer represents the balance between heat production and heat loss. The normal temperature of the mouth as defined by Howell [3] is 98.36 F. with a diurnal variation, which may be as much as 1 degree centigrade. Temperature is usually highest between 5 and 7 p. m. and lowest between 6 and 7 a. m.

Heat production, as was first shown by Lavoisier,[4] is the result of oxidation and chemical changes occurring mainly in the muscles and perhaps to a certain extent in the liver. Food and increased muscular activity are directly responsible for increased heat production. The adult male produces approximately 1,600 calories in twenty-four hours when the body is resting and more in accordance with increased muscular activity.

Heat is lost from the body by radiation and conduction from the skin, by evaporation of sweat from the skin, by expiration and also by the bodily excretions. Usually radiation and conduction from the skin account for about 75 per cent of the total daily heat loss. The other sources account for 14.5, 10.7 and 1.8 per cent, respectively.

1. (*a*) Barbour, H. C.: The Heat-Regulating Mechanism of the Body, Physiol. Rev. **1**: 295-322 (April) 1921; (*b*) The Pharmacology of Body Temperature, Brit. M. J. **2**: 660-661 (Sept.) 1913. (*c*) Barbour, H. C., and Prince, A. L.: The Control of Respiratory Exchange by Heating and Cooling the Temperature Centers, J. Pharmacol. & Exper. Therap. **6**: 1-11 (Sept.) 1914.

2. Kinghorn, H. M.: The Significance of Slight Fevers, Nat. Tuberc. A. Tr. **15**: 209-210, 1919.

3. Howell, W. H.: Textbook of Physiology, Philadelphia, W. B. Saunders Company, 1926, pp. 966, 972, 974, 978 and 979.

4. Lavoisier, cited by Howell.[3]

The body temperature represents one of the body constants; hence its regulation is of importance. Heat regulation involves a physical or physiologic mechanism that suffices in environmental temperature above 15 C. (59 F.) and a chemical mechanism concerned mostly in additional heat production induced through increased muscular tone or muscular contraction (shivering), which is called into play below 15 C. The endocrine glands also play a rôle through control of the rate of oxidation in the body and possibly, as Swingle has intimated, through control of the blood and plasma volume, which secondarily concerns heat distribution in the body. In recent years the importance of water in relation to heat regulation and fever has been considerably emphasized, fever being ascribed by Balcar, Sansum and Woodyatt [5] to a deficit of free water in the organism.

Barbour has summed up the general evidence concerning fever in the following manner:

> Accepting the water balance as the central factor in fever, we are obliged to correlate its behavior with that of the nervous heat-regulating mechanism. In the infectious fevers some such process as the following takes place. As the provocative poison reaches the tissues (perhaps the muscles in particular) catabolic changes are initiated which increase the affinity of the muscles for water. This general demand on the blood for water tends to reduce the blood volume, especially at the expense of surface blood. The skin immediately becomes cooler, and this arouses the nervous regulation against cold, thus exaggerating the process of vasoconstriction and hemoconcentration. This continues until the blood becomes warm enough for the nervous system to interpret the temperature as comfortable or neutral.

NEUROGENIC FEVER AS A CLINICAL ENTITY

There are many observers who believe in the existence of a low grade fever, primarily neurogenic in origin. By some, this has been termed psychogenic fever. It is thought to be the result of various types and degrees of psychic stimuli acting on an unstable heat-regulating center. This explanation of the unstable heat-regulating center has been adopted particularly by pediatricians. These questions have been discussed by Talbot,[6] Frankel,[7] Neilson, Cannon,[8] Courtiere,[9] Deutsch,[10] Egger,[11] Horder [12] and Falcon-Lesses and Proger.[13] Deutsch believing that fever may be produced by anything that stimulates the vasomotor system and that many people who have a constant fever have a psychic disturbance. Egger has seen cases of vasomotor neurosis with fever lasting many years. He thinks that fever is instituted by a vasomotor or heat-regulating center. Falcon-Lesses believed that he produced fever in three patients through various types of psychic stimulation. He concluded that it was psychogenic in origin. While it is true, as will be shown, that long-continued low grade fever is associated frequently with stigmas of neurosis, it will likewise be demonstrated that the fever persisted in still more individuals in whom no neurogenic basis could be found. It is obvious, of course, that the labeling of such fever as of neurogenic or psychogenic origin accomplishes nothing for either the patient or the physician and serves on the other hand as a block to investigation and progress.

5. Balcar, J. O.; Sansum, W. D., and Woodyatt, R. T.: Fever and Water Reserve of the Body, Arch. Int. Med. **24**: 116-128 (July) 1919.
6. Talbot, F. B.: Body Temperature and Its Regulation, in Abt, I. A.: Pediatrics, Philadelphia, 1925, p. 6.
7. Frankel, Dora: Ueber die normale Korperlemperatur der Kinder und ihr Verhalten bie Bowegung und Rube, Deutsche med. Wchnschr. **1**: 267-268 (Feb.) 1913.
8. Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear and Rage, New York, D. Appleton & Co., 1929, pp. 351-352.
9. Courtiere, J., cited by Barbour.[14]
10. Deutsch, Felix: Das Psychogene Fieber, Med. Klin. **22**: 1213-1215 (Aug. 6) 1926.
11. Egger, cited by Deutsch.[10]
12. Horder, Thomas: Cases of Pyrexia Without Physical Signs, Canad. M. A. J. **16**: 130-135 (Feb.) 1926.
13. Falcon-Lesses, Mark, and Proger, S. H.: Psychogenic Fever, New England J. Med. **203**: 1034-1036 (Nov. 20) 1930.

CLINICAL MATERIAL INVESTIGATED

In the records of the Mayo Clinic covering the period from 1919 to 1930, many such case histories were found from which a hundred were selected as the basis of this study. These conform to the following: 1. The patients were over 15 years of age. 2. Those with chills were excluded. 3. The fever and clinical manifestations persisted for at least a month prior to registration. 4. The cause of the fever after adequate investigation was recorded as undetermined. 5. Adequate data relative to the subsequent course were available.

The Height of the Fever.—The mouth temperature varied from 99 to 103 F. The readings were controlled by the rectal temperature in a large series of cases. The daily range of temperature in individual cases and in different cases was quite variable.

Objection might be raised to admitting that a temperature of 99 F. constitutes fever and, furthermore, that 103 F. does not represent a low grade fever. However, those patients evidencing a temperature of 99 F. on one day often had higher temperatures on other days. Also, in the patients with high temperatures, chills were lacking and the course of the disease was identical with that in patients with lower grades of fever.

Ages of Patients

Age	15-20	20-29	30-39	40-49	50-59	60-69	Total
Number of patients	11	30	36	12	6	5	100

The Time of the Fever.—It was found that 11 per cent of the patients had fever throughout the entire day and 4 per cent in the morning and afternoon. The morning rise rarely appeared until the patients had been awake from two to three hours. In the majority of cases the fever did not appear until later in the day, in 69 per cent in the afternoon, in 14 per cent in the afternoon and evening, and in 2 per cent in the evening only. In approximately 90 per cent of the cases the fever developed in the afternoon and evening. This is of interest, since experience with tuberculosis shows that rest and sleep are conducive to lower temperatures and activity is conducive to the production of heat.

The Age of the Patients.—The ages of the patients varied from 15 to 69 years. Sixty-six and two-thirds per cent of these patients were between 20 and 40 years of age, whereas 38 per cent of the clientele of the clinic fall between these ages. The age distribution is shown in the accompanying table.

The Sex Ratio.—This is equally instructive. Females constitute almost three fourths of the entire group, 72 per cent. This also is out of keeping with the sex ratio of the clinic clientele, in which women represent 54 per cent. It would appear, therefore, that in the vast majority of instances the patient was a woman between the ages of 20 and 40 years. Under 50 years of age there were nineteen males and seventy females.

Appearance of Patients.—In 65 per cent of the patients, despite the prolonged existence of fever, the physician's note stated that the patient looked healthy.

In only seven instances were they said to look sick. This obviously suggests the possibility of functional disease.

Occupation.—Occupation appears to exert no influence. Fifteen various occupations were given but no significant relationships revealed.

Duration of the Fever Before Admission.—Fever was the presenting symptom in ninety-five out of the hundred cases and was known to have existed from periods lasting from one month to eleven years prior to registration. The average duration for the group as a whole was 17.6 months.

Duration of the Fever After Registration.—This was ascertained through correspondence with patients and their relatives and physicians. It was found that the fever had subsided in from one month to six years in a total of fifty-five cases. In forty-nine of them the mean duration after dismissal was eleven months. Thirty-eight patients continue to have fever, and seven are dead.

The Average Duration and Outcome of the Fever.—It would therefore appear that, of the fifty-five patients who recovered, the fever persisted for approximately twenty-eight months, while thirty-eight patients continue to have fever and seven of them are dead.

ASSOCIATED SYMPTOMS

Three symptoms are commonly associated with this fever: exhaustion, nervousness and loss of weight. In 87 per cent of the hundred cases, exhaustion was the most pronounced accompanying symptom. In some it was mild, so that the patients were able to carry on regular work; in others it was more severe, leading to curtailment of hours or change of occupation, while in a few it was so pronounced that the patients were bedridden or incapable of any work whatever. The cause of the exhaustion is just as obscure as the cause of the fever. The frequency and prominence of exhaustion would seem to indicate that it is an integral part of the syndrome.

Nervousness of one form or another was given by approximately 50 per cent of the total group, and 38 per cent record loss of weight. Additional symptoms were present and are listed according to decreasing frequency in the order named: abdominal distress, pain in the back, headache, cough, palpitation and tachycardia, generalized body pains, night sweats, anorexia, dyspnea, polyuria, dysuria, menorrhagia, hemoptysis and pruritus ani.

THE ONSET OF FEVER

The onset of the fever in the majority of instances was insidious and without a known cause. Many of the patients admitted the existence of exhaustion, nervousness or other symptoms prior to the onset of the fever. However, a considerable group [12] stated specifically that their symptoms developed during or immediately after an acute infection. Fifteen said that they had had influenza, eight an acute cold, and one each some passing infection which had in the interim passed entirely out of the clinical picture. In eighteen of this group of twenty-eight the fever has disappeared.

ERRONEOUS OR UNCONFIRMED DIAGNOSES MADE ELSEWHERE

Information regarding the diagnoses made prior to admission to the clinic was sought and reported. Tuberculosis, presumably pulmonary, had been diagnosed in twenty-six instances. In no case had the bacillus of tuberculosis been demonstrated. Four of the group had had, in addition, diagnoses of Hodgkin's disease, gallbladder disease, salpingitis and Addison's disease, none of which were confirmed here or elsewhere. Fourteen others had had various unconfirmed diagnoses, while twenty-one had previously been told that no cause for the fever was apparent.

We were particularly interested in the frequency of the diagnosis of tuberculosis in so large a proportion of the cases. Tuberculosis is a serious disease and the diagnosis should not be made unless attended with certainty. The diagnosis of tuberculosis affects not only the future of the individual but frequently the offspring to the third and fourth generations. Twelve of these patients were sent to sanatoriums for tuberculosis, where they stayed for periods varying from five months to two years, without a positive diagnosis or relief in a single instance. After dismissal from the clinic, in three of these twenty-six cases a diagnosis of tuberculosis was again made by the local physicians, all three patients returning to the clinic with fever but with no evidence of tuberculosis. We have not found, nor has any one else found, positive evidence of tuberculosis in a single one among these 100 patients after from two to twelve years, and we believe that tuberculosis as the cause of the fever can be legitimately excluded.

THE RÔLE OF NEUROSIS

A large number of these cases of long continued, low grade idiopathic fever were referred to the clinic with the statement from the family physician that the fever was of infectious or neurogenic origin. Others were so considered in the clinic, including such diagnoses as chronic nervous exhaustion, anxiety neurosis, neurasthenia or functional disease. These may be grouped for the sake of argument under the head of neurosis, representing in all twenty-five cases. In this group fever subsided in eleven, while in two of them the fever has persisted for more than ten years and the patients have been unable to work because of exhaustion, for which no organic basis could be discovered. It is of interest to compare these results with the results of the group in which the diagnosis of neurosis was not suggested. In the sixty-eight nonneurotic patients the fever subsided in more than 60 per cent, which would seem to indicate that the prognosis, so far as disappearance of fever is concerned, is somewhat better in those patients evidencing no manifestations of neurosis.

THE RÔLE OF FOCAL INFECTION

Every one of the hundred patients have been checked for foci of infection, and demonstrable lesions have been found at one time or another, in one or more locations, in thirty-five cases. Removal of foci was advised and followed out in all, either at the clinic or subsequently. Fever subsided in twenty-one, or 60 per cent, of these cases. This should be contrasted with the fifty cases in which no foci were found or removed, in which the fever subsided spontaneousy in approximately the same proportion, 59 per cent. It seems, therefore, that the percentage of patients in whom the fever disappeared was not affected by removal of foci, as many recovering without focal removal as with focal removal. This must not be interpreted as meaning that foci of infection should not be removed but only as indicating that such procedures do not materially increase the percentage of recoveries in this syndrome.

Four patients insist that they recovered as a result of treatment directed specifically to infection, one to the removal of a gallbladder, one to the intravenous injection of gentian violet, one to roentgen treatment of the cervical lymph glands, and the fourth to treatment for Malta fever. In connection with Malta fever, it should be stated that all members of this group of 100 patients who had not been subjected to tests for agglutination for Malta fever at the clinic were requested subsequently to have the test made by their state boards of health or by the clinic through the submission of blood for immunologic studies. The patient already referred to was the only one indicating the existence of this disease.

MANAGEMENT

Since the cause of the fever is unknown, the treatment has been largely symptomatic. In many instances, an especially devised regimen has been adopted whereby the patient has systematically undergone treatment with a series of specific remedies, quinine, emetine, iodine, arsenic, and the like, with results that were very disappointing. The intravenous use of dyes has been likewise without results of significance or permanence. Foci of infection have been eradicated when recognized, neuroses have been accorded appropriate management, and general supportive measures have been adopted, all to little avail. Rest has proved helpful in the temporary control of the fever but has not been effective in securing arrest or cure.

We have found, in the management of patients suffering from this syndrome, that our familiarity with the syndrome serves to engender confidence. Our statements that we have seen many patients recover from the syndrome, that it is not due to tuberculosis, and that it does not end fatally have proved our best weapons in allaying apprehension.

PROGNOSIS

The prognosis so far as mortality is concerned is good. In the group as a whole, only seven of the patients died. In connection with the latter, two significant facts are revealed: All of these patients were over 44 years of age and all of them had lost considerable weight. It is evident, therefore, that low grade, unexplained fever in patients over 44, particularly in those who have lost weight, should be watched continuously and carefully. Three of these cases came to autopsy. One patient died of streptococcic septicemia, one of vegetative endocarditis and one of sarcoma of the kidney. In a fourth, a mass was located in the right upper quadrant prior to death. For the other three, no cause of death could be assigned. Thus malignancy accounts probably for two cases and blood stream infection for two others.

SUMMARY

One hundred cases of long continued, low grade fever of unknown origin were studied in detail in the Mayo Clinic between January 1919 and January 1930. Clinical records of these cases are analyzed in regard to age, sex, occupation, fever characteristics, associated symptoms, general appearance, neurotic tendencies and the presence of foci of infection, the course of the disease and the outcome.

1. Such fever is almost three times as frequent in the female as in the male and occurs most frequently between the ages of 20 and 40 years, at that period of life in which physical and mental strain is probably greatest.

2. The type of fever is often designated neurogenic or psychogenic—we believe without sufficient basis. Neurotic manifestations are pronounced in at least 25 per cent of the cases. Those showing neurotic stigmas are less subject to help from treatment.

3. Focal infection is present in 35 per cent of this series, but removal of foci, although often helpful in the individual case, does not increase materially the percentage of recoveries.

4. Of these patients, 93 per cent are still living; seven are dead, two of neoplasm, two of blood stream infection and three of unknown causes. Of the 55 per cent of patients who recovered, the average duration of the fever was approximately twenty-eight months.

CONCLUSIONS

The evidence relative to the cause of the fever is not clear. It may be that it is neurogenic in origin, that it is due to focal or general infection, that it results from some metabolic derangement, or that it represents a failure of heat regulation common to a group of diverse minor functional or organic derangements in the body; or it may be that it is a disease, *sui generis*. The truth is not yet evident. As we see it, the need is for further investigation rather than the too ready acceptance of an unsupportable explanation.

Thirty-Fourth and Pine streets.

A CLINICAL METHOD FOR DETERMINING MODERATE DEGREES OF VITAMIN A DEFICIENCY

P. C. JEANS, M.D.
AND
ZELMA ZENTMIRE, M.S.
IOWA CITY

The accepted and easily recognized clinical evidences of vitamin A deprivation are associated only with marked degrees of vitamin A deficiency. Night blindness is one of these several clinical phenomena, but it is one that is not recognized by an ordinary routine examination and one that usually is considered only when the complaint is made by the patient. A routine test for night blindness probably would reveal many more cases than are now suspected. It might be expected also that a suitable method of examination would detect night blindness, which is present in such a mild degree that the afflicted individual is entirely unaware of its existence. Since the etiology of night blindness in these cases is presumably the same, regardless of its degree, it should be possible to detect even moderate deficiency of vitamin A by means of appropriate tests. Our purpose in this presentation is to show that the visual tests that have been employed in this study constitute a satisfactory means of determining moderate degrees of vitamin A deficiency.

EXPERIMENTAL PROCEDURE

The clinical material consisted of children who had been accepted as patients in the pediatric and orthopedic divisions of the Children's Hospital in Iowa City. No attempt at selection of cases was made, except that patients had to be physically able to walk to the room used for the tests and mentally competent to count dim

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spots of light in a totally darkened room. In general, the tests were made immediately after the children came under hospital care, so that the observations were the result of the home regimen rather than that of the hospital.

The instrument used in making the test was an electrically illuminated Birch-Hirschfeld photometer supplied by Carl Zeiss, Inc. This instrument consists essentially of a metal tube with a light bulb at one end, and at the other end an iris diaphragm, a five-light-point disk and a Goldberg wedge. The bulb was lighted from a 110 volt circuit controlled by a rheostat. The rheostat setting was kept practically constant and was such as to cause the bulb to glow very brightly. The iris diaphragm is opened or closed by moving a lever along a scale marked with the diameter of the opening in millimeters. The five-light-point disk is made of blackened metal and has punched out of it the five point quincunx of the throw dice. The Goldberg wedge is a glass slide treated photographically in such a manner that a gradual and uniform decrease of light transmission is obtained from end to end, with practically complete transmission at one end to zero transmission at the other. The wedge is marked with a scale of opacities, the numbers of which increase from one to thirteen.

The subject, looking at the photometer, observes its light as regulated by the wedge and the iris diaphragm and transmitted through the disk, as shown in the illustration. Because of gradations in light transmission produced by the light wedge, the light spots are unequally visible. The number of light points observed is dependent on the intensity of the light source, which in turn depends on the size of the opening through the iris diaphragm and the position of the wedge. The position of the wedge relative to the disk was not altered during a test. Light sensitivity is determined by the number of observed light spots in the five-light-point disk relative to the diaphragm opening and the wedge opacity.

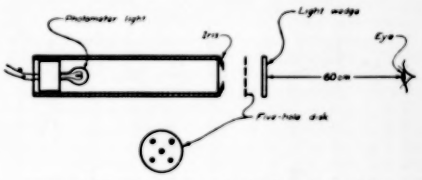
The advisability of determining the foot candle power of the light from the photometer was considered. It was decided that the determination would be of no value, because the instrument is well standardized and we were dealing with light differences rather than with light quantities.

The technic of the test was worked out by the "trial and error" method but was unchanged after a satisfactory procedure was found. The test was standardized with the assistance of nine adults, who presumably had normal vision (without or with correction) and no vitamin A deficiency. The subjects were examined in a room that could be made absolutely dark. The walls were white to a height of 6 feet to facilitate bright illumination, when desired, within the field of vision of the subject. Bright illumination was obtained by means of a 150 watt electric light bulb in a metal reflector supported above and behind the subject's head and so placed as to illuminate the wall faced by the subject. The subject was seated in such a position that the eyes were 60 cm. from the wedge of the photometer on a table in front of him and 100 cm. from the wall.

In the performance of the test the subject was seated comfortably in the chair, an interval timer was set for five minutes and then the moderate illumination of the room was replaced by the bright light of the 150 watt lamp. During the five minute period of exposure to the bright light the patient's intelligent cooperation was enlisted by an explanation of the plan of the test. When the interval timer gave the five minute alarm, it was reset for ten minutes, the bright light was turned off and as quickly as possible the initial reading was made. When vision was defective, the operator frequently covered the points of light with the hand in order to avoid fatigue of the patient's eyes. When the alarm indicated the expiration of the period in darkness, the ten minute reading was taken in the same manner as the initial reading.

The liminal value of the light stimulus (end point of a reading) was taken as the point at which three constant spots of light were distinctly visible. Often five, four or three spots were temporarily visible before enough light was admitted to the eyes to permit the subject to see three constant points. The operator always confirmed the accuracy of an end point by covering the wedge with the palm of the hand for a few seconds in order to rest the patient's eyes and then by having the subject again report on the number of points of light constantly visible.

In making the test the Goldberg wedge was set at some definite point and the amount of light admitted through the instrument was controlled by means of the iris diaphragm. For the first test, immediately after the bright light had been extinguished, it was found



Schematic representation of the Birch-Hirschfeld photometer.

that for the normal eye and with the wedge set at 7, the end point opening of the iris diaphragm varied from 14 to 20 mm. inclusive; or, if the wedge was set at 6, the reading was 8 or 10 mm. During the ten minute period in darkness the normal eye recovered light sensitivity to the extent that, with the wedge set at 7, the end point opening of the iris diaphragm was from 3 to 6 mm. inclusive. Wedge 6 was too transparent to be used for the normal eye after ten minutes in the dark.

The distance of 60 cm. from the instrument to the subject was chosen because this proved to be a convenient working distance and because to the average eye the light points are too dim at greater distances.

The time intervals were kept short, because children do not naturally remain seated quietly for more than a few minutes. The intervals chosen proved entirely satisfactory for showing definite differences between normal and abnormal eyes as regards dark adaptation.

It was desired that there should be a minimum of adjustment of the instrument in the dark. It was necessary for the examiner to learn to count the clicks of the wedge scale as it was shifted in darkness, and to count the clicks of the spring catch as the lever of the iris diaphragm was moved over its scale. When occasionally necessary to verify an adjustment in the darkness, the operator turned off the electric current and counted the clicks required to bring the Goldberg wedge or the lever of the iris diaphragm to a known point, while making the excuse of resting the subject's eyes for a few seconds.

The test was so simple and so well controlled that repeated examinations gave results consistently within either the normal or the subnormal ranges, regardless of whether the subject had normal or abnormal dark adaptation. Apparently, unfamiliarity with the instrument did not influence the results. The majority of the children enjoyed the test.

A study was made of the diet preceding the examination. The information elicited was considered unsatisfactory. A reliable quantitative estimate of vitamin A intake cannot be made by questioning the subject concerning his diet.

RESULTS

Two hundred and thirty-three children were examined by this test. It was found desirable subsequently to exclude twenty from consideration. Because the tests were made immediately after the children came under observation, the unsuitability of some of the subjects for taking the test was not always immediately known. It was found that eight of the children examined were either too young or had too great an impairment of mental capacity to give reliable results. Eleven children had grossly defective vision. Ten of these were syphilitic children with chorioretinitis, optic atrophy and corneal scars from keratitis; one was a child with a marked refractive error who was tested without glasses. In all these eleven cases the children had such poor vision that it was impossible to determine whether any part of their abnormal dark adaptation was due to factors other than their physical defects. One child was excluded because he was too ill at the time of his examination to give results that represented his true state. In the course of this study it was found that falsely subnormal results were obtained from children with rising temperature, severe headache, dizziness, mydriasis or weakness such as follows tonsillectomy.

Photometer Readings Showing the Results with Twenty-One Subjects Retained in the Hospital for Observation

		Readings When Admitted					Readings When Discharged			
		Initial Reading		10 Minute Reading			Initial Reading		10 Minute Reading	
Case	Age, Years	Wedge Setting	Diaphragm Setting	Wedge Setting	Diaphragm Setting	Interval, Days	Wedge Setting	Diaphragm Setting	Wedge Setting	Diaphragm Setting
1	6	5	10	5	10	14	6	8	7	6
2	8	7	16	7	12	5	7	18	7	4
3	8	7	16	7	10	10	7	16	7	6
4	9	7	20	7	12	13	7	14	7	4
5	9	6	14	6	8	17	7	18	7	6
6	10	6	16	7	12	16	6	10	7	6
7	11	7	20	7	20	6	7	16	7	4
8	11	7	20	7	16	14	7	18	7	4
9	11	6	10	7	10	<36	7	16	7	4
10	12	7	18	7	12	42	7	18	7	6
11	12	6	20	6	14	7	7	18	7	6
12	12	6	8	7	9	5	6	8	7	6
13	13	7	18	7	8	<6	7	18	7	6
14	13	6	8	7	12	<9	7	20	7	6
15	13	6	14	7	10	13	6	10	7	6
16	13	5	8	6	10	>14 <34	6	10	7	6
17	14	7	18	7	10	4	7	14	7	6
18	14	6	12	6	12	13	7	20	7	6
19	14	7	16	7	11	22	7	14	7	4
20	15	7	16	7	12	5	7	14	7	4
21	15	7	20	7	12	12	7	18	7	4

One hundred and sixty-eight of the 213 children remaining were considered to have normal recovery of light sensitivity under the conditions of the test. For 149 of these the instrument readings were within the limits determined as normal. For fifteen, slightly less light through the instrument was required for the first reading than the standard accepted as normal, but the second reading was well within the normal limits and the recovery of light sensitivity was good. In the cases of four children, both the first and second readings were outside the normal limits, but the differences between the two showed excellent recovery of light sensitivity in the dark.

For forty-five of the children the instrument readings were of such a character as to indicate poor recovery of light sensitivity. All these children were examined by some member of the ophthalmologic staff of the hospital and in no case was there discovered any indication that the abnormality was other than functional. It was not feasible to keep all these children under observation. However, twenty-one of them were retained in the hospital and were given 3 teaspoonfuls of cod liver oil daily in addition to their regular hospital diet. Without exception, all of them subsequently showed normal results with the dark vision test. The period required for recovery varied from four days to six weeks, with an average of about twelve days. General improvement and ultimate recovery were easily detected by repeated examinations made at intervals of two or three days. No prediction could be made concerning the time required for recovery. Recovery was considered to have occurred when two successive examinations on different half days resulted in normal readings.

INTERPRETATION OF RESULTS

Functional night blindness is well established as a manifestation of vitamin A deficiency. A condition equivalent to a moderate degree of night blindness was observed in a group of children by means of the test that has been described. All the children of this group who were retained under observation subsequently showed normal dark adaptation. The recovery is interpreted as indicating that the original visual defect was functional.

Because of the accepted relationship of functional night blindness to nutrition, the occurrence of recovery while the children were ingesting a good diet with an abundance of vitamin A is believed to constitute evidence that the children of this group had been suffering from vitamin A deficiency. The facts and argument presented are believed to show that the test gives satisfactory evidence of vitamin A deficiency when the results of the test show subnormal readings and when certain recognized conditions are excluded. The conditions that warrant exclusion have been enumerated. It is believed that the test detects relatively mild degrees of vitamin A deficiency because of the short period required for recovery in some of the cases. A recovery period of four or five days would seem to warrant such a conclusion. Results obtained with the test, which are to be classed as normal, constitute evidence that the amount of vitamin A available for the generation of visual purple is adequate. However, we do not have evidence that this amount of vitamin A is optimal for good nutrition; it may be or it may not.

COMMENT

It is assumed that the children with subnormal dark adaptation who were not retained under observation would have reacted in a manner similar to that of the observed group. If this assumption is granted and the evidence is accepted as interpreted, approximately 21 per cent of the children examined had a greater or less degree of vitamin A deficiency. This incidence figure is held to be of no significance, except among children

of the same class; i. e., children of a low economic level who are physically afflicted.

In the course of this study it was noted that some children with vitamin A deficiency were mentally alert and in physical appearance were well nourished; others were underweight, appeared malnourished and were sluggish physically and mentally, although not mentally deficient. Still other children appeared as though they were suffering from nutritional deficiencies, but the dark vision tests indicated no deficiency of vitamin A. It was noted, also, that in general the vitamin A deficient children who were retained under observation improved both in physical and in mental well being.

SUMMARY

A test for determining the sensitivity to light following partial dark adaptation was applied to a group of 213 children. Forty-five of them were found to have subnormal dark adaptation, and approximately half (twenty-one) were kept under observation and given a good diet, which included cod liver oil. All who were retained for study regained normal adaptation. The average period required for recovery was twelve days. There are reasons to believe that this test is satisfactory for detecting moderate degrees of vitamin A deficiency.

STUDY OF THE TREATMENT IN ACUTE TETANUS

FREDERIC W. TAYLOR, M.D.
INDIANAPOLIS

The results obtained from the treatment of active tetanus cases are far from satisfactory. Mortality statistics on this disease vary considerably from different sources but lack any constant variation that would indicate a desirability of one form of therapy over another. The only constant variation in these statistics is found in a comparison of cases with long and with short incubation periods. This is well illustrated in the cases of Calvin and Goldberg.[1] They found a mortality of 84 per cent when the incubation was less than five days, of 83 per cent when it was from five to ten days, of 37 per cent when it was from ten to fourteen days, and of 25 per cent when it was from fourteen to twenty-one days.

Until the last few years much clinical investigation has been directed toward determining the most efficacious route of administering tetanus antitoxin. Most failures following any advocated method of treatment have been attributed to an insufficient quantity of serum. The result of this reasoning has been a pyramiding of the antitoxin dosage to unbelievable heights, limited only by the amount of serum available.

This specific treatment with tetanus antitoxin regardless of the route of administration or the amount given has been strangely ineffective in bringing about any marked decrease in mortality. This is remarkable, since the prophylactic use of this serum has achieved such brilliant results.

It was with the hope of gaining additional information, which might aid in the treatment of active tetanus, that this study was attempted.

The material used includes all the cases of active tetanus admitted to the Indianapolis City Hospital and the Indiana University hospitals from 1927 to 1933. These cases were submitted to a critical examination in an attempt to analyze the treatment given and the results obtained. Certain fallacies in the treatment will be pointed out and suggestions made of improvements that might well be instituted.

The patients were quite representative of those applying to a general hospital for treatment after the onset of tetanic symptoms. Their ages ranged from 4 to 63, with 59.4 per cent between the ages of 5 and 15. During the period of our study forty-two patients were treated for tetanus. Of these, five cases were not considered in the study because of a reasonable doubt as to the correct diagnosis from either a clinical or a laboratory standpoint. The remaining thirty-seven were undoubtedly cases of tetanus. This forms a very small series but, nevertheless, one that suggests several striking deductions.

GENERAL CONSIDERATIONS

Before going further it might be well merely to mention some of the pertinent bacteriologic and physiologic aspects that the disease presents. Tetanus is a symptom and sign complex resulting from the irritant effects of tetanus toxin on the central nervous system. Toxin is elaborated from the focus of infection by the anaerobe Clostridium tetani. This organism will not live in healthy, sound tissue but requires either necrotic tissue or tissue that is partially devitalized. Such a devitalization is usually accomplished by the introduction of a foreign body along with the tetanus bacteria. From this focus, usually a deep penetrating wound, toxin is produced. It is believed that the toxin is picked up from the blood stream or the focus by the peripheral nerves or their lymphatics. These structures transport the toxin to the central nervous system. Here it has a particular irritative effect on the cells of the hindbrain and cord. The toxic effects are found in the cells of the lower motor neurons, but to a lesser degree. Once combined with the nerve cell, antitoxic serum cannot displace the toxin. Antitoxin neutralizes only that toxin which is free in the blood or tissues. In this limited neutralization lies its only value in cases of active tetanus.

The nerve cells of the central nervous system are hyperstimulated. These cells and the medullated nerve fibers show slight degenerative changes. However, these degenerative changes are not specific and may be seen in other toxemias. The damage produced in the nerve cells by tetanus toxin is not permanent and in this feature contrasts with poliomyelitis, in which much of the damage is permanent. The nervous lesions of tetanus apparently are entirely reversible. With recovery, even from the most desperate cases, complete restoration of function is the rule.

Death in these patients results from exhaustion, spasm of the glottis and convulsion but not from the neurologic lesion produced by tetanus toxin. Patients do not die from the disease itself, as in bulbar poliomyelitis, "but from its symptoms."[2] The suggestion is made in this connection that if the distributing focus and symptoms are adequately handled the disease will limit itself.

The treatment of active tetanus logically falls into three phases. These are (1) treatment of the local focus, (2) administration of appropriate sedatives and general supportive therapy, and (3) administration of specific antitoxic serum.

From the Department of Bacteriology and Pathology, Indiana University School of Medicine.

1. Calvin, J. K., and Goldberg, A. H.: The Prognosis of Tetanus, J. A. M. A. 94: 1977-1981 (June 21) 1930.

2. Huntington, R. W., Jr.: Treatment of Tetanus, Yale J. Biol. & Med. 3: 207-233 (Jan.) 1931.

LOCAL LESION

Much has been written about the treatment of the local lesion in tetanus. Thorough careful débridement has universally been advocated. Yet, in our experience, this phase has received but little consideration compared with that directed toward the administration of antitoxin. At least, this would seem to be true in the present series. In twenty-three of the thirty-seven cases, adequate exploration was not done on admission to the hospital. In these there were sixteen deaths (69.6 per cent).

It is a frequently noted fact that the local wound in cases of tetanus may appear quite innocent or may be "healed." Thus attention is detracted from this initiating cause and directed toward the patient's more active symptoms. Complete local excision of this type of wound has been rightly advocated. There are still prominent texts on the subject [3] which teach that "if the wound is healed it should not be disturbed." Just such a procedure was followed in seventeen of our "healed wound" cases. Of these patients, twelve died, a mortality of 70.5 per cent. It is thought that this disastrous outcome was largely due to negligence in appreciating the local wound as the distributing focus of the toxin and hence the cause of the entire tetanic syndrome.

As pointed out by others, it is astonishing how many foreign bodies are found in these innocent appearing or "healed" lesions. That these foreign bodies greatly add to the danger of the disease goes without saying. The following examples taken from our cases illustrate this point:

Two of our patients in an extremely critical condition continued a stormy and downhill course after more than a week of the most intense serum therapy. Both cases appeared to be hopeless. Then quite unexpectedly foreign bodies were extruded spontaneously from the draining wounds. In one patient this occurred nearly two weeks after hospital treatment had been instituted. Immediately after the extrusion, convulsions ceased in both patients and they started on a rapid uninterrupted course to recovery.

These cases point out strikingly the importance of a foreign body in the local wound and how it may enhance local production of toxin and bacterial growth. It seems reasonable to assume that in all cases in which the severity of the disease increases with the patient's stay in the hospital there is an inadequately treated focus that is still elaborating tetanus toxin.

In the twenty deaths, only four autopsies were allowed. These are of interest because of the conditions found in the local wounds. Two of the four cases presented wounds that were "entirely healed." When, however, these were opened and explored each contained a small foreign body surrounded by necrotic tissue and pus containing Clostridium tetani. The wound in the third case was not explored by the pathologist because it was "completely healed." In the fourth case a foreign body surrounded by pus and necrotic tissue was removed in the ward the day before the patient reached the autopsy table. This wound likewise yielded tetanus bacilli on culture.

These examples are given to emphasize the importance of the local wound and as an argument against the dictum that "if the wound is healed it should not be disturbed." Tetanus is caused by the local focus and continued by it. The local lesion should therefore receive primary consideration. Active tetanus is an acute surgical emergency carrying with it a mortality far in excess of most surgical emergencies. It should be treated as such with admission to the hospital by way of the operating room.

In a discussion of the local wounds, our cases caused by "blank cartridges" should not be omitted. There were ten of these, resulting in weeping draining wounds of the hands or fingers. It has often been noted that this type of injury frequently introduces the gun wadding of the cartridge into the wound. The wadding acts as a foreign body, stimulating growth of tetanus bacilli carried in with it. Our cases emphasize this observation. Of the ten cases, eight were searched for gun wadding. In all eight cardboard wadding was found and removed. In the other two a search was not made, and both patients died.

No comment is necessary to the foregoing except perhaps the observation that all blank cartridge wounds contain gun wadding, which should be removed.

It would seem from this discussion that the most logical treatment of the local wound in cases of active tetanus is that used by Tulloch.[4] He advocated the complete excision of the focus without entering infected tissue. At many sites, of course, this is not feasible. Here the only alternative is ample wide exploration under general anesthesia, with a careful search for débris and foreign bodies.

Opinions differ as to the relative merits of the various dressings or irrigating solutions that have been recommended. Tulloch doubts the value of any particular procedure over any other. He also questions the value of oxidizing agents, such as hydrogen dioxide. Since the wound is infected, it is probable that a hypertonic wet dressing best serves the requirements.

SEDATIVES AND GENERAL CARE

It may again be stated that all deaths in tetanus are the result of one or more of the following: convulsions, spasm of the glottis or diaphragm, exhaustion and respiratory failure. It is obvious that therapy directed to prevent these conditions is of prime importance.

In the past, hypnotics, narcotics and general anesthesia have been used to control these symptoms. Before the advent of tetanus serum, sedatives used and recommended include practically all of those listed in the Pharmacopeia and need not be mentioned. In mild cases of tetanus many of these are of considerable value. In severe cases all either lack sufficient potency or are too transient in their effect.

The ideal sedative drug should produce a quiet restful narcosis which is well sustained for a number of hours. Its physiologic effect must not be exhausting on the patient after continued use. Drugs very close to this ideal have been used in recent years as basal anesthesias and have been advocated in controlling tetanic seizures.

Sodium amytal (sodium isoamylethyl barbiturate) has been used in this capacity.[5] Avertin (tribromethanol) has also been used and probably enjoys a greater general popularity.[6]

Both of these drugs are relatively safe and give a well sustained narcosis. In nineteen of our cases,

3. Kirk, N. T.: Tetanus, in Nelson Loose-Leaf Living Surgery, New York, Thomas Nelson & Sons, 1927, p. 467A.

4. Tulloch, W. J.: J. Hyg. **18**: 103 (Aug.) 1919.

5. Mason, J. T.; Baker, J. W., and Pilcher, F., Jr.: Sodium Amytal in Surgical Management, Am. J. Surg. **9**: 9 (July) 1930. Smith, E. R., and Call, H.: Value of Sodium Amytal in Tetanus, J. Indiana M. A. **24**: 472 (Sept.) 1931.

6. Huntington,[5] Lawen, A.: Behandlung der Tetanus mit Avertin, Zentralbl. f. Chir. **55**: 194 (Jan. 28) 1928. Loewe, G.: Zur Behandlung der Wundstarrkrampfes mit Avertin, Deutsche Ztschr. f. Chir. **235**: 814, 1932.

sodium amytal was used intravenously to control symptoms. This was quite efficient and proved far more satisfactory than any other medication. There is one point in this use of sodium amytal which is worthy of note and which likewise applies to tribrom-ethanol. The tendency was to give amytal only when convulsions become severe. The drug was then withheld until convulsions again appeared. A more rational procedure would be to continue sustaining doses, keeping the patient under moderate narcosis at all times. In this way the patient might entirely escape severe tetanic seizures and large amounts of sodium amytal or tribrom-ethanol would not be necessary to restore a restful sleep.

The time-honored quiet darkened room is of great importance. It is too often either overlooked or not available. That the average tetanus patient is not kept sufficiently relaxed and quiet is well illustrated by our series. Of the twenty patients who died, fifteen (75 per cent) continued to have convulsions or rigidity up to the time of death. Nineteen of the twenty (95 per cent) were restless and not relaxed.

Since the tetanus patient frequently succumbs to exhaustion, all practical supportive therapy must be brought into action. The fluid intake should be maintained at a high level and elimination watched closely. As the patient usually cannot take sustaining amounts of fluid and nutrition by mouth, these elements must be given by other routes. For this purpose the intravenous and subcutaneous use of dextrose solution and physiologic solution of sodium chloride are of invaluable aid.

ANTITOXIC SERUM

The pedestal on which tetanus serum has been placed in medicine is due entirely to its use as a prophylactic measure. Here it is surpassed by none of the specific serums. Ample proof of this was demonstrated in the World War.[7] Because of these remarkable results, the serum has been viewed with the same faith in the treatment of active tetanus. Here, because of many complex factors, the antiserum fails to duplicate the specific action found in its prophylactic use.

The statement has been made that "tetanus antitoxic serum has done more harm than good in the treatment of active tetanus." This at first sounds like rank heresy. However, there is much truth in the fact that this specific has brought about practices that certainly are detrimental to the patient's welfare. Because of the fact that it has been considered a specific, it has been used in general practice to the exclusion of other phases of treatment. The local lesion has been neglected, as well as general supportive measures and sedatives.

The majority of recent writers have expressed the opinion that, in the care of patients who have already shown tetanic symptoms, tetanus serum is of doubtful value. Perhaps the most valuable statistics along this line have been those of Calvin and Goldberg.[1] These writers found no decrease in the mortality rate at Cook County Hospital despite the ever increasing amounts of serum used. Nor could they find any advantage of administration by one route over any other. In spite of adverse evidence as to its value, the average tetanus patient continues to be loaded with massive doses of serum. Failures are still explained on the basis of insufficient serum. Again the local wound and administration of ample sedatives receive little consideration.

In our series twenty patients died, a mortality of 54 per cent. This high rate cannot be explained because of lack of antitoxic serum. The amount given ranged from 50,000 to 420,000 units. Of twenty-three patients receiving from 50,000 to 100,000 units, twelve died (52.1 per cent). Of ten patients receiving from 200,000 to 420,000 units, two died (20 per cent). These figures would seem to indicate strongly the value of massive doses of serum. On further consideration, however, it is clear that those receiving small total amounts lived but a short time after admission to the hospital. Had their span of treatment been longer, they eventually would have received the massive aggregate doses already mentioned. It is because of this fact that statistics indicating the great value of huge doses of serum should not be accepted without further knowledge of their origin.

Our patients received rather uniform initial doses of antitoxin. These consisted in from 20,000 to 60,000 units in 89 per cent of the cases.

Serum was administered by vein, intramuscularly, and beneath the spinal meninges. All three routes were utilized in the majority of cases. In the light of our own results and those of others it would seem that no particular route holds an advantage over any other, except that intravenous and intramuscular medication make the antitoxin immediately available and there is no delay caused by slow absorption. Intravenous administration is somewhat more dangerous than intramuscular medication, because of anaphylactic reactions, and probably no more effective. The intrathecal route would seem theoretically to be more desirable, since the serum causes a nonspecific inflammatory reaction about the spinal nerve roots. Experimental evidence demonstrates that this reaction prevents or retards the absorption of toxin from the nerve trunks.[2] Clinically no advantage is noted, and this route has the disadvantage of giving delayed absorption by the circulating blood.

A few of our patients received injections of antitoxin into and about the wound site. While this procedure may prevent the absorption of some toxin, it certainly destroys or interferes with the natural barrier of granulation tissue thrown up about the focus. When local injection is used, the serum should be infiltrated at some distance from the actual lesion where it cannot disturb this barrier. Local antitoxic serum nerve blocks have been advocated and would seem to be of considerable benefit.

As previously stated, serum is of value in neutralizing the uncombined tetanus toxin but can be of no aid in removing that already combined with nervous tissue. Much smaller amounts of serum than those generally used are amply sufficient to neutralize the free toxin of the body. In this light it would seem a more rational procedure to give from 30,000 to 60,000 units of serum when the patient is first seen. This dose might be repeated in a week or so, when a decrease of the amount of antitoxin in the tissues has occurred.

With the consideration of serum as an adjunct and not a "specific" in the treatment of active tetanus, more attention will be focused on the local lesion and general care of the patient.

COMMENT

It is hoped that the foregoing has emphasized several phases in the treatment of active tetanus cases not generally appreciated. Treatment should be directed along three well defined lines. These are, in order of their importance, (1) adequate care of the local wound, (2) sedative and general care and (3) tetanus antitoxic

7. Golla, F.: Analysis of Tetanus Statistics, Lancet **2**:966 (Dec. 29) 1917. Sanford, A. H.: Tetanus and the War, Bull. 7, Internat. A. M. Museums, May 1918.

serum. Though mentioned separately here, these must be considered as an inseparable triad in the treatment of the disease. If emphasis is to be placed on any particular phase more than on another, I believe that sedatives and the local focus should receive that consideration rather than the use of antitoxin.

1. *Local Lesion.*—Since the local wound causes the disease and continues it, prime consideration should be given to that focus. Whenever possible, immediate complete excision of the wound is recommended. When this is not possible, complete exposure and search for foreign bodies should be done under general anesthesia. The foreign body is a potent factor aiding bacterial growth and continuing the elaboration of toxin. It should not be overlooked. In active tetanus cases it must be considered that the local wound contains a foreign body until proved otherwise. This is particularly true of "blank" cartridge wounds. The local wound of tetanus is an acute surgical emergency and should be treated as such, even though the patient is later admitted to the medical wards.

2. *Sedatives and General Care.*—Patients with tetanus die from "their symptoms and not from the disease itself." It therefore follows that if these symptoms can be controlled adequately the patient's chance of recovery is much greater. Tribrom-ethanol or sodium amytal is recommended to induce light narcosis. The suggestion is also made that these drugs be given at regular intervals so as to keep the patient quiet and relaxed. This would seem wiser than to use them only when the patient becomes rigid and is on the verge of a convulsion. Equally important in conserving the patient's strength with sedatives is adequate supportive care. Particular attention must be given so that fluid intake is maintained at a high level and proper elimination is effected.

3. *Tetanus Antitoxic Serum.*—The high reputation that this product enjoys is due entirely to its prophylactic use. Here it is a specific in preventing the disease or at least in lengthening the incubation period. In active tetanus it is in no sense a specific, and its value is questioned by many. As the antitoxin is unable to withdraw toxin already combined with nervous tissue, its sole action is to neutralize uncombined toxin in the body. Here it may have considerable value and, until definite proof to the contrary, its use may well be continued. It seems unnecessary to administer the huge quantities used at present. It is recommended that from 30,000 to 60,000 units be given when the patient is first seen. This might be repeated if the case runs a long, protracted course. The intramuscular route of injection is perhaps the most satisfactory.

The conclusion of two workers in this field nearly forty years ago is as pertinent today as it was then: "An ounce of clean surgery is worth several pounds of serum therapy." [8]

8. Owens, J. E., and Porter, J. L.: Report of Three Cases of Tetanus, J. A. M. A. **29**: 1004 (Nov. 13) 1897.

Vitamin C.—The simplest method of supplying vitamin C to young children is to give orange juice; tomato juice is also a good source, and a still cheaper one is the juice expressed from raw swede turnips. There is some clinical evidence, though this is not yet conclusive, that a suboptimal supply of vitamin C is by no means uncommon in Western countries, leading comparatively rarely to frank scurvy but being responsible for ill defined states of malaise and lack of energy.—Colwell, S. J: Vitamins in Clinical Medicine, *Practitioner* **132**:15 (Jan.) 1934.

EPIDEMIC PLEURODYNIA

ARTHUR B. RICHTER, M.D.
AND
HAROLD D. LEVINE, M.D.
BOSTON

During July, August and September 1933, twenty-four cases of epidemic pleurodynia, or "devil's grip," were admitted to the Peter Bent Brigham Hospital and are typical of cases reported in the literature, as well as of those seen at other Boston hospitals [1] and by numerous physicians in private practice in Boston during the same period.

The first outbreak of epidemic pleurodynia was reported in Virginia in 1888 by Dabney.[2] Since that time epidemics have been reported in New York City in 1923,[3] a second one in Virginia in 1923,[4] in Philadelphia and New Jersey in 1924,[5] and in Tennessee [6] and Massachusetts in 1925.[7] As described in the literature,[8] the condition is characterized by the abrupt onset of excruciating pain in the chest or the epigastrium, aggravated by breathing or by movement of the trunk; tenderness, generally over the site of pain; an accompanying rise in temperature to from 100 to 105 F. with defervescence within twenty-four to thirty-six hours; in some cases recurrence of the attack; invariable recovery; occurrence in healthy young people of either sex during the summer months, and occasional occurrence of several cases in the same family; absence of important pulmonary or pleural physical signs, and a leukopenia or normal white blood cell count. While the symptoms end in many cases with a single paroxysm, there is a recurrent type in which the same symptoms recur after an interval of one or more days but in milder form, the total duration being from less than a day to as long as three weeks. The symptomatology may be predominantly thoracic with localization of the pain to either side of the chest, or it may be confined to the upper part of the abdomen, often with rigidity and even simulating an acute surgical condition. The respiratory rate may be slightly or markedly accelerated and shallow. The pulse rate usually parallels the temperature rise, and there may be chills, prostration, headache, pains in the extremities and back, anorexia, nausea or vomiting.

DESCRIPTION OF CASES

Twenty-four cases diagnosed as epidemic pleurodynia were observed during the summer of 1933 at the Peter Bent Brigham Hospital, thirteen being ward patients and eleven patients in the outdoor department. Discussion of these cases deals only with the first group, which has been more completely studied. The second group, however, represents cases similar in all respects to the first.

From the Medical Clinic of the Peter Bent Brigham Hospital.

1. Crone, N. L., and Chapman, E. M.: New England J. Med. **209**: 1007 (Nov. 16) 1933.

2. Dabney, W. C.: Account of an Epidemic Resembling Dengue, Which Occurred In and Around Charlottesville and the University of Virginia in June 1888, Am. J. M. Sc. **96**: 488, 1888.

3. Greene, D.: Epidemic Pleurodynia, Arch. Pediat. **41**: 322 (May) 1924. Hanger, F. M., Jr.; McCoy, C. C., and Frantz, A. M.: An Epidemic of Mild Fever of Unknown Nature, J. A. M. A. **81**: 826 (Sept. 8) 1923.

4. Payne, G. C., and Armstrong, Charles: Epidemic Transient Diaphragmatic Spasm: A Disease of Unknown Etiology, Epidemic in Virginia, J. A. M. A. **81**: 746 (Sept. 1) 1923.

5. Torrey, R. G.: Epidemic Diaphragmatic Pleurodynia, or "Devil's Grip," Am. J. M. Sc. **168**: 564 (Oct.) 1924.

6. Wood, R. B.: An Epidemic of Acute Pleurodynia in Tennessee, J. Tennessee M. A. **18**: 255 (Jan.) 1926.

7. Churchill, F. S.; Landis, E. M., and Glusker, S. D.: An Epidemic of Undetermined Nature: Dengue? J. A. M. A. **87**: 821 (Sept. 11) 1926.

8. Epidemic Myalgia, or Pleurodynia, editorial, J. A. M. A. **102**: 460 (Feb. 10) 1934, gives references to the foreign literature.

Characteristically the disease began abruptly with severe pain in the lower anterior portion of the chest, unilaterally or bilaterally, or in the epigastrium. Pain was generally sharp or stabbing in nature and accentuated by deep breathing or change in position. Coincidentally there was a rise in temperature to from 101 to 104 F. Three of the patients had a severe chill. Cough was extremely rare. The pulse rate rose with the temperature, varying from 90 to 135 per minute at the height of the fever, and averaging 109. At the same time, respirations varied from 22 to 70 per minute, averaging 29. The original fever varied from twelve

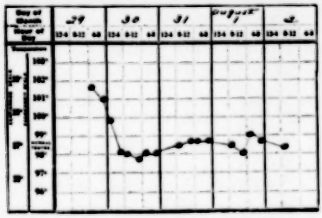


Chart 1.—Fever curve in epidemic pleurodynia showing single paroxysm of fever.

to seventy-two hours in duration. In about half of the cases the disease ended with a single paroxysm, but in the other half, after an interval of from twelve to twenty-four hours, the temperature again rose, with exacerbation of the symptoms. In the interval between the peaks, pain was either absent or minimal. In all cases the second and subsequent paroxysms were less severe than the first. One case was remarkable in that after the initial bout of pain and fever there was a recurrence of pain without a simultaneous rise in temperature. In the recurrent type the pain often shifted to the opposite side of the chest, to the shoulder or to the epigastrium. In about three fourths of our cases the disease lasted from five to seven days; the shortest duration was thirty-six hours and the longest seven days.

The age incidence in our group ranged from 12 to 28 years, the former being the lowest age limit in the medical service of this hospital. The youngest patient known to us was a 5 months old infant treated at the Children's Hospital.[9] The two sexes were equally affected. It is interesting that many of the patients reported a similar illness among other members of their families or neighbors. Two of our patients were nurses. In all but a few cases, physical examination was entirely negative. In a small group, however, such indefinite signs as protective splinting of the chest, slight limitation of diaphragmatic excursion, suppression of breath sounds or questionable dulness to percussion were found. Râles were never heard. In one case, in which all other changes were quite typical of epidemic pleurodynia, there was a transient pleural friction rub. One half of the group showed marked tenderness over the site of pain. Roentgen examination of the chest, including fluoroscopy, of eleven patients when at the height of their symptoms was negative. There was no fluoroscopic evidence of limitation of diaphragmatic excursion or of fluid in the pleural cavity.

The majority of the cases showed an elevated white blood cell count, the highest being 17,300 and the lowest 5,300, with an average of 10,400, on admission. In some previous epidemics there has been a tendency toward a leukopenia. The polymorphonuclear cells varied from 65 to 94 per cent, with an average of 77.7 per cent; the lymphocytes ranged from 7 to 27 per cent, averaging 14.3 per cent, while the monocytes varied from 1 to 16 per cent, with an average of 7.3 per cent. In no case was there an eosinophilia. No intracellular sporozoa were found. Other routine laboratory studies were not remarkable.

REPORT OF CASES

The following are typical case histories:

CASE 1.—Dora W., a healthy Negro housewife, aged 28, had an uncomplicated pneumonia at 16 years. The family, past and contact histories were negative for tuberculosis. Twenty hours before admission the patient was seized with severe pain in the left lower part of the chest, radiating toward the sternum and made worse by deep inspiration. There was a short shaking chill and slight dyspnea. The temperature on admission was 101.8 F. Physical examination showed slight splinting of the left side of the chest and diminished breath sounds over the lower half of the left side of the chest, with slight dulness over this area. The left side of the diaphragm appeared to move less than the right. Deep inspiration caused excruciating pain in the left lower portion of the chest. The respiratory rate was 28 and the pulse 100 per minute. The heart was normal and the blood pressure 110 systolic and 85 diastolic. Roentgen and fluoroscopic examinations of the chest were negative. The white blood cell count was 8,900 and the blood smear showed 78 per cent polymorphonuclear leukocytes, 15 per cent lymphocytes and 7 per cent monocytes. Thirty-six hours after the onset, the temperature was normal and remained normal until discharge three days later (chart 1). Slight pain persisted on deep inspiration for twenty-four hours after the temperature reached normal. Examination of the chest eighteen

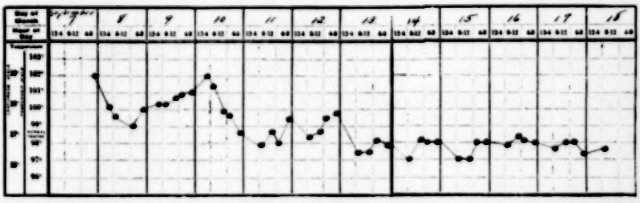


Chart 2.—Fever curve in epidemic pleurodynia showing primary and secondary paroxysm of fever.

hours after admission showed no physical changes, except splinting with pain on deep inspiration. When seen in the outdoor department three weeks later, she was well.

CASE 2.—Anna B., a healthy white schoolgirl, aged 14, was awakened ten hours before admission by sharp pain in both sides of the chest anteriorly, more marked on the right and aggravated by deep breathing or movement of the body. The family and past histories were irrelevant. There was no cough, only slight nausea and headache throughout the day. On admission the temperature was 102 F., the pulse 100 and the respiration rate 26 per minute. Examination was negative except for tenderness to pressure over the lower right side of the chest. Fluoroscopic examination and roentgenograms of the chest were negative. The white blood cell count was 17,300 and the blood smear showed 90 per cent polymorphonuclear leukocytes, 6 per cent lymphocytes, 4 per cent monocytes and

9. McKhann, C. F.: Personal communication to the authors.

0 eosinophils. Twelve hours later the temperature had fallen to 100 F., with slight residual pain (chart 2). Twenty-four hours later the temperature again rose to 102 F., with recurrence of the pain, less severe than in the first attack. The temperature then fell rapidly to normal, with complete disappearance of the pain. The temperature remained normal, except for a slight rise to 99 F. on the following two days. Two weeks later the patient was well.

The first case represents a single paroxysm and the second illustrates the recurrent type. The picture is not always as clear cut as in the two cases cited and numerous cases were seen in which the diagnosis of epidemic pleurodynia could be neither made nor ruled out. For example, a youth, aged 18, with a history of intermittent migratory joint pains of five months' duration, complained of pain in the right side of the chest on breathing. Examination showed tenderness in the right lower portion of the chest, with spasm and tenderness in the corresponding upper abdominal quadrant. The temperature was normal, and roentgen examination showed limitation of the right side of the diaphragm and slight clouding of the right base. A rheumatic etiology could not be ruled out. Three other members of the same family had epidemic pleurodynia a short time previously. Such cases with complicating etiologic factors are not included in our series.

ETIOLOGY

The etiology is unknown. Small [10] observed a plasmodium within the red blood cells of two patients during the epidemic described by Torrey [5] in 1924. He designated the organism Plasmodium pleurodyniae. This finding has not been confirmed in subsequent epidemics. A study of an institutional epidemic by Greene [3] showed that the etiologic agent is not carried in water, milk or food. All the 141 cases reported occurred in the boys' unit of the institution, which was carefully isolated from the girls' unit. The epidemic appeared to be checked when quarantine was established, and the author concluded that the spread was by contact from one individual to another. Dabney [2] considered the possibility that the original epidemic might have been an atypical form of dengue, modified by climatic difference. This was also considered by the observers of the Cape Cod epidemic in 1925.[7] Dengue, as such, has not been recognized in New England. The plasmodium described by Small has not been found in the present epidemic.[11] Crone and Chapman [1] showed that the intravenous injection of blood from a patient into a normal individual produced no symptoms.

DIAGNOSIS AND TREATMENT

The epidemic nature of a disease is not generally appreciated until the similarity of a group of cases is recognized. Hence, in our own series, although epidemic pleurodynia was considered, the early cases were classified under the more common diagnosis of acute pleurisy. One must not be misled by the apparent epidemic form of chest pain and overlook the more serious forms of pleurisy. Cases of pleurisy or early pneumonia during an epidemic of pleurodynia may present no more physical changes than the latter. Patients with a diagnosis of epidemic pleurodynia should not be readily discharged as cured without further medical observation. The diagnosis is particularly difficult when the patient is first seen a day or more after the onset, when the fever may be slight or absent. It is important during an epidemic to recognize that the abdominal symptoms, particularly in children, might lead to an unnecessary operation. The difficulty in diagnosis of the individual case is not adequately stressed in the accounts of the previous epidemics. The occurrence of complications or sequelae should rule out the diagnosis of this disease. For example, the occurrence of a streptococcic empyema or acute endocarditis as sequelae, as reported in the Virginia epidemic of 1923,[4] makes the original diagnosis unlikely.

The treatment in our cases was that of acute pleurisy.

721 Huntington Avenue.

10. Small, J. C.: A Protozoan Organism Within the Erythrocytes of Patients Suffering from Epidemic Pleurodynia ("Devil's Grip"), Am. J. M. Sc. **168**: 570, 1924.

11. McKhann.[3] Crone and Chapman.[1]

THE TYPES OF HUMAN HYPERSENSITIVENESS

THEIR RELATIONSHIP TO THE LIABILITY TO SERUM REACTIONS

J. A. RUDOLPH, M.D.
AND
MILTON B. COHEN, M.D.
CLEVELAND

The practicing physician is frequently confronted with problems that may arise following the administration of therapeutic serums. The phenomena that may occur after these injections have been variously designated as hypersensitivity, hypersusceptibility, serum disease, anaphylaxis or allergy. From the standpoint of prevention and treatment, however, it is as unsatisfactory or inadequate to designate all conditions that may so arise by any of these terms as it is to state that a person has tuberculosis or an enteric fever. This loose usage of these terms in most of the published reports and the placing together of all types of these reactions in one group have been the cause of much confusion and of some fatalities.[1] The physician who has a knowledge of the classification of these reactions can predict and control them satisfactorily, and fatalities can be prevented.

Serum reactions can be divided into three classes: (1) immediate, (2) delayed and (3) serum sickness.

The immediate reaction occurs in from several seconds to several hours. In a moderately severe reaction an individual experiences marked apprehension and profuse sweating. Simultaneously the face becomes flushed and the eyes become congested, the lids edematous and the skin covered with urticaria. There is itching of the nose and throat, lacrimation, mucoid nasal discharge, a harsh brassy cough and difficulty in breathing, associated with wheezy breath sounds. Nausea, vomiting and general prostration are frequently seen. Any or all of these phenomena may be observed as the reactions vary in severity from very mild to very severe. In fact, the reaction may be so severe that respiratory death may occur in a few minutes.

The delayed type of reaction often referred to in the literature as "accelerated serum disease" of Pirquet and Schick [2] occurs in from six hours to five days

From the Asthma and Hay Fever Clinic of the Asthma, Hay Fever and Allergy Foundation.
Read before the Pediatric Section of the Academy of Medicine of Cleveland, Oct. 25, 1933.

1. Hunt, L. W.: Recent Observations in Serum Diseases, J. A. M. A. **99**: 909-912 (Sept. 10) 1933. Toomey, J. A., and August, M. H.: Reactions Following Administration of Diphtheria Antitoxin and Toxin-Antitoxin; Results of Desensitization, J. Prev. Med. **4**: 281-294 (July) 1930.

2. Pirquet, Clemens, and Schick, Béla: Die Serumkrankheiten, Leipzig and Vienna, Franz Deuticke, 1905.

following the administration of serum, the average time being from twenty-four to forty-eight hours. The symptoms resemble in all respects those of the immediate reaction. The severity, however, is much less and diminishes with the increase in time between the injection of the serum and the development of the reaction.

Serum sickness occurs in from six days to several weeks after the injection of serum. Most of the reactions occur between the seventh and the twelfth day. The reaction may be local (at the site of the injection), general or both. A typical case begins with itching, swelling and urticaria at the site of the serum injection, followed within a few hours by a feeling of malaise, pain and stiffness in the joints, generalized itching with urticaria, and tender and swollen lymph glands. In addition, any of the internal organs may be involved in a reaction, giving rise in some cases to laryngeal or bronchial symptoms, in others to acute abdominal symptoms, which must be differentiated from those due to some acute intra-abdominal infection. The condition may be confused with acute rheumatic fever, because of the fever and joint manifestations, or with tetanus, because of the marked muscle stiffness.

Patients can also be divided into three classes with respect to serum reactions: (1) naturally sensitive man, or man with atopy; (2) artificially sensitized, or anaphylactic man, and (3) normal man.

There is a voluminous literature dealing with the immunologic aspects of naturally sensitive and anaphylactic man. For the purpose of this paper, however, only those points having immediate clinical importance will be discussed.

Naturally sensitive man is one who has atopy. "By atopy is meant certain clinical forms of hypersensitiveness that do not occur, so far as is known, in the lower animals and which are subject to hereditary influence." [3] In this group have been included asthma, hay fever and eczema. It is also believed that urticaria, angioneurotic edema and certain forms of food and drug idiosyncrasy may be classified with these.

About 10 per cent of individuals have this heredity.[4] It is now believed generally that unless an individual has this hereditary influence and background he will not develop the symptoms of atopy.

The reaction in atopy results from the union within or on the surface of body cells of specific antibodies and antigen. The reaction may occur following the first known exposure to the antigen. The antibody of atopy differs materially, as pointed out chiefly by Coca [3] and his associates, from that participating in anaphylaxis in animals or man.

Artificially sensitized, anaphylactic, man differs from naturally sensitive man in that there is no hereditary influence determining the capacity to become sensitized and that the sensitivity follows the absorption or the injection of an antigen. There is always an incubation period between the first contact and the development of sensitivity. The sensitivity never produces asthma, hay fever, eczema, urticaria or other related clinical manifestations of atopy. The reaction occurs on the injection of the second dose of the antigen and is the result of a union between the antibody and the antigen. The antibody differs from that found in atopy, as pointed out previously, and is identical with that of anaphylaxis, as seen in experimental animals (guinea-pig, rabbit, dog). Atopic man, like any normal man, can acquire anaphylactic sensitivity but, as pointed out previously, only man with the proper inheritance can develop atopy.

Normal man is one who has neither atopic nor anaphylactic sensitiveness. For the purpose of this discussion the terms atopic, anaphylactic and normal will be used only with respect to the antigen horse serum.

The immediate reaction may occur in man atopically or anaphylactically sensitive to horse serum. It is in the atopic individual that the serious and fatal reactions are apt to occur. In the anaphylactic individual they are usually less severe and it is in this individual that the delayed type of reaction is more likely to occur. Apparently the onset of the reaction and its severity parallel the degree of sensitiveness. This in turn varies with the size of the sensitizing dose of horse serum and the length of the incubation period. The sensitivity is usually at its height in a few weeks following the sensitizing injection and diminishes gradually thereafter, so that the longer the period following the previous injection of horse serum the less likelihood of an immediate reaction there will be following a subsequent injection. In many individuals previously anaphylactically sensitive the interval elapsing before it becomes necessary to administer a therapeutic serum is long enough to allow the sensitivity to disappear completely and the patient reacts entirely like a normal individual.

It is the normal individual who develops serum sickness uncomplicated by immediate or delayed reactions. The exact mechanism of serum sickness is not understood. The frequency of its occurrence increases with the size of the dose of serum given. It is greatest with unpurified and unconcentrated serums. In addition, serums [5] from certain horses produce it more often than those from other horses,[6] and there is some evidence that it occurs much more frequently when therapeutic serums (antibody containing) are given than when normal serum is given. It is also most frequent following intravenous injection.

According to published reports, some type of serum reaction occurs in from 40 to 100 per cent [7] of individuals to whom therapeutic serums are given, depending on the size of the dose and the method of its administration. Fortunately most of these reactions are serum sickness, which, while troublesome, is usually harmless. Since, however, it occurs so frequently it is advisable to explain to some responsible person in the family whenever serum is given that serum sickness is apt to occur in a week or ten days, so that it will cause no alarm and no misunderstanding. Death in an immediate reaction occurs about once in 70,000 injections and serious reactions about once in each 10,000 injections.[8] It is evident, therefore, that if the physician can pick out those individuals who are likely to have serious immediate reactions he need have no fear in giving therapeutic serums to all others needing it.

3. Coca, A. F.: Relation of Atopic Hypersensitiveness (Hay Fever, Asthma) to Anaphylaxis: Review of Recent Literature, Arch. Path. & Lab. Med. **1**: 96-118 (Jan.) 1926.

4. Cooke, R. A., and Vander Veer, Albert: Human Sensitization, J. Immunol. **1**: 201 (June) 1916. Cooke, R. A., and Spain, W. C.: Studies in Hypersensitiveness: Comparative Study of Antibodies Occurring in Anaphylaxis, Serum Disease and Naturally Sensitive Man, ibid. **17**: 295-328 (Oct.) 1929.

5. Park, W. H., and Thorne, B.: The Result of the Use of Refined Diphtheria Antitoxin, Gibbon's "Globulin Preparation" in the Treatment of Diphtheria, Am. J. M. Sc. **132**: 686-692, 1906.

6. Park, W. H.: Human Hypersensitiveness to Whole Horse Serum or Serum Globulins Following Diphtheria Toxin—Antitoxin Injections—Its Importance, J. Immunol. **9**: 17-24 (Jan.) 1924. Park and Thorne.[5]

7. Weaver, G. H.: Serum Disease, Arch. Int. Med. **3**: 485-513 (June) 1909.

8. Park, W. H.: The Absorption of Antitoxin When Given Intravenously and Subcutaneously, with Suggestions as to the Dosage in Case of Diphtheria and Tetanus, J. A. Am. Physicians **27**: 434-441, 1912.

The most important aid in this differentiation is the history. If the patient has a history of asthma or hay fever or other atopy he belongs to the group likely to react, and this is particularly true if he is known to have symptoms on contact with horses; although before one can determine the likelihood of a reaction to horse serum it is necessary to find out whether he has atopy to this substance. The skin and eye tests are useful.

Skin tests are of two types, dermal, or scratch, and intradermal. The scratch test is performed by making a linear scratch 1 cm. long through the epidermis and placing on it a drop of the undiluted serum that is to be injected. A similar scratch is covered with physiologic solution of sodium chloride. A positive reaction is indicated by the development within thirty minutes of an urticarial wheal with pseudopodia, surrounded by an area of erythema, in the absence of any reaction in the area covered with saline solution. If this test is negative it is safe to proceed with the intradermal test, which is performed by injecting from 0.01 to 0.02 cc. of a 1:100 dilution of the serum into the skin. A similar amount of physiologic solution of sodium chloride is injected into another area. A positive reaction is indicated by the development within ten minutes of an urticarial wheal with pseudopods surrounded by an area of erythema in the absence of any change in the control. If this test is negative, a similar injection should be made with a 1:10 dilution.

The eye test is performed by placing into one conjunctival sac one drop of a 1:10 dilution in saline solution of the serum at the same time that a drop of physiologic solution of sodium chloride is placed in the other eye. A positive reaction consists of itching, lacrimation, redness of the sclera and conjunctiva, and edema of the conjunctiva and lids. This is the most important of these tests and is the one to use if only one test is to be performed.

In a patient with a history of atopy to horses in whom either the scratch, the intradermal, the eye test or all of them are strongly positive, the administration of a therapeutic serum is contraindicated, as a severe reaction is almost certain to follow and it is in this type of case that death occurs.

If there is a history of atopy and these tests are negative, the patient is not atopic to horse serum and is not likely to have a severe reaction. Serum may therefore be given to such a person, but precautions to be described later should be taken. Similarly patients who have previously had injections of horse serum and who give very marked reactions to the tests described may receive injections of therapeutic horse serum provided the following precautions are followed:

1. The serum should be injected subcutaneously in an extremity, the thigh or upper arm, so that the rate of absorption can be controlled by a tourniquet.

2. A tourniquet should be placed above the point of injection and should be tightened sufficiently to obstruct the venous return during the injection. One cubic centimeter should be given. The tourniquet should then be loosened but not removed and the effect of absorption observed for five minutes. If any systemic symptoms develop, the tourniquet must be tightened so that no further absorption can occur. Since that amount of reaction parallels the rate of distribution of serum to the reacting cells and this in turn depends on the rate of absorption, the reaction can be controlled by loosening the tourniquet from time to time, allowing a rate of absorption that is below the reacting level. In addition, the effect of the previously absorbed serum may be controlled by epinephrine.

3. Before injecting serum, one should have a hypodermic syringe loaded with 1 cc. of epinephrine hydrochloride solution in a dilution of 1:1,000. After tightening the tourniquet at the first sign of reaction, one should inject from 0.5 to 1 cc. of the epinephrine solution intramuscularly above the tourniquet.

4. When no reaction occurs within five minutes, the remainder of the serum can be injected at one time. When there is reaction, controlled as described, the remainder of the serum should be administered in divided doses over a period of several hours, all the precautions being repeated.

"Desensitization"[9] as a method of avoiding serum reactions has been advised by many authors and is attempted by many clinicians. It can never be carried out in the atopic patient, since "desensitization" does not occur in atopy, and any increased tolerance that might be obtained to horse serum would be to an amount infinitely smaller than the therapeutic dose of any serum. Furthermore, it requires many months to produce even this small increase in tolerance. It is also questionable whether anaphylactic man can be "desensitized" rapidly, as is evidenced by the case reports of Tuft[10] and of Blankenhorn.[11] For clinical purposes, "desensitization" should be abandoned.

10616 Euclid Avenue.

UNDULANT FEVER

ITS RELATION TO BRUCELLIASIS IN DOMESTIC ANIMALS

L. E. STARR, D.V.M., M.S., PH.D.
BLACKSBURG, VA.

Brucelliasis of domestic animals, or, as it is more commonly known, abortion disease, contagious abortion, infectious abortion or Bang's disease, has long been recognized as a major infectious disease of great economic importance to the live stock industry. This disease is caused by one or more of the varieties of the organisms belonging to the Brucella group and is prevalent throughout the entire world.

A febrile disease of man variously termed Mediterranean fever, Gibraltar fever, Corsican fever, Malta fever, undulating fever, and more recently, undulant fever is caused by the same organism that is responsible for brucelliasis in domestic animals. Man acquires the disease from infected animals by ingestion of raw, contaminated dairy or meat products or by direct contact with infected animals.

The confusion in nomenclature with respect to the organism involved and the specific disease in both ani-

9. Currie, J. R.: On the Supersensitization of Persons Suffering from Diphtheria by Repeated Injections of Horse Serum, J. Hyg. **8**: 35-60, 1907; Examples of the Immediate and Accelerated Reaction Following Two Injections of Antidiphtherial Serum, ibid., pp. 61-64. Friedlander, A., and Runnels, S. C.: Reaction Following Use of Antipneumococci Serum, Mil. Surgeon **42**: 320 (March) 1918.

10. Tuft, Louis: Fatalities Following Reinjection of Foreign Serum: Report of Unusual Case, Am. J. M. Sc. **175**: 325-331 (March) 1928.

11. Blankenhorn, M. A.: Anaphylactic Shock and Failure of Desensitization After Administration of Pneumococcus Type I Serum, J. A. M. A. **85**: 325-326 (Aug. 1) 1925.

Departmental contribution 19.
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mals and man is unfortunate and has definitely retarded control work.

In view of the fact that Brucella infection occurs primarily in animals and secondarily in man, a through knowledge of the disease in both domestic animals and man is necessary before effective prophylactic measures can be instituted by the medical profession for the control of undulant fever.

In order to emphasize the close association of brucelliasis in animals and man, a short review of the results of early investigations appears advisable.

During the past century a peculiar febrile disease of man had been noted in the Mediterranean area of southern Europe, a disease that was not typical of the usual febrile disorders such as typhoid or malaria. Marston [1] in 1861 named it Mediterranean or gastric remittent fever. A little later Bruce,[2] an English army physician, isolated a short coccobacillus from the spleen in a fatal case. By inoculating a monkey with this organism and recovering it, following the death of the monkey in twenty-one days, Bruce definitely proved the organism to be the causative agent of what he termed Malta fever, after the island on which many of the cases occurred.

The work that was done by Bruce has been confirmed many times. He named the organism Micrococcus melitensis. In honor of Bruce, the organisms belonging to this group have been given the generic name Brucella. By chance, members of the British royal commission who were investigating the disease in the interest of the British army garrisons stationed in that area discovered that a considerable percentage of the blood serums from the native goats reacted positively with the agglutination test. Subsequently the organism Brucella melitensis var. melitensis [3] was found to be present in the blood, milk, urine, feces or uterine discharges of actively infected goats. It was also frequently found in the spleen, liver, mammae and lymph nodes at autopsy. Premature births of the young were common with infected animals. Agglutination tests of 2,000 goats on the island of Malta showed that 40 per cent reacted positively and that 10 per cent of these were eliminating the infective organism in their milk, urine or feces. Army regulations prohibiting the use of raw goat's milk by the soldiers in the garrisons resulted in an abrupt decline in the number of cases of undulant fever among the army personnel. Since the discovery of Brucella melitensis var. melitensis infection in goats in the Mediterranean area and the fact that it was transmitted from those animals to man with resultant attacks of undulant fever, similar outbreaks have been reported in Mexico and the southwestern part of the United States. Brucella melitensis var. melitensis infection of goat origin is confined principally to warm climates in which goats are raised for dairy and meat production.

At approximately the same time that Bruce and others were investigating Malta fever in the Mediterranean area, studies were being made in other parts of the world on abortion disease of cattle, with no appreciation of any possible relationship between the two diseases. Bang,[4] a Danish veterinarian, succeeded in isolating the causative agent of abortion in cattle and proved its infectious nature by animal inoculation.

In 1911 Schroeder and Cotton [5] reported finding abortion bacilli in milk sold on the open market and suggested that the presence of the organism in a product which was consumed in the raw state by man might result in human infection. Traum [6] in 1914 recovered the causative agent of abortion disease in swine from an aborted fetus. Evans [7] in 1918 demonstrated the intimate morphologic, cultural and biochemical relationship of Brucella melitensis var. melitensis and the organism recovered by Bang from cattle affected with abortion disease. This indicated the intimate if not identical relationship of the two varieties of the organism. Later investigations showed that the organism responsible for abortion in swine belonged to the same group. As the result of the investigations of Evans and others, the Brucella-like organism originating from goats, cattle and swine came to be considered as varieties of the same genus. Since Brucella melitensis var. melitensis, which was commonly found in goats and was known to be the causative agent of undulant fever in man, was practically identical with the organism that was responsible for abortion disease in cattle and swine, the thought was expressed that the latter varieties might also be the causative agent of the disease in man. In 1924 Keefer,[8] a physician in Baltimore, reported such a case in a man with undulant fever who had had no contact in any manner with goats. Since that time many similar cases have been reported in all parts of the world, particularly in the temperate zones, in which the source of the infection could be definitely traced to either cattle or swine.

The principal varieties of the Brucella group are Brucella melitensis var. melitensis, Brucella melitensis var. abortus, and Brucella melitensis var. suis, which are found primarily in goats, cattle and swine, respectively. The host specificity is not absolute, since each of the varieties has been isolated from other species of animals. Unfortunately, any one of the three varieties may, under favorable conditions, affect man and produce a clinical attack of undulant fever. Subvarieties have been reported but are of little importance in relation to disease production, since they are as a rule avirulent.

The Brucella group affects a large number of species of animals. It has been reported, either as the result of positive serologic tests or by the isolation of the specific organism, from man, goats, sheep, cattle, swine, horses, mules, asses, dogs, cats and chickens. Under experimental conditions monkeys, turkeys, ducks, geese, pigeons, pheasants, rabbits, guinea-pigs and mice have been found to be susceptible to infection.

For the diagnosis of undulant fever in man and brucelliasis in animals, the agglutination and the complement fixation tests are most commonly used. Although they compare favorably in accuracy, the agglutination test is generally used on account of its comparative simplicity. This test, when set up and interpreted by experienced men, is as reliable as any

1. Marston, J. A.: Report on Fever (Malta) (1861), Great Britain Army M. Dept. Rep., 1863, pp. 486-521.

2. Bruce, David: Notes on the Discovery of a Micrococcus in Malta Fever, Practitioner **39**: 161-170, 1887.

3. According to Bergey (Manual of Determinative Bacteriology, ed. 3), the correct nomenclature is Alcaligenes melitensis (Bruce) and Alcaligenes abortus (Bang). In accordance with popular usage at the present time the author has adopted the nomenclature suggested by Hardy (Bulletin 158, National Institute of Health). Summarized, his nomenclature reads as follows: goat variety, Brucella melitensis var. melitensis; cattle variety, Brucella melitensis var. abortus; swine variety, Brucella melitensis var. suis.

4. Bang, Bernhard: Die Aetiologie des seuchenhaften (infectiosen) Verderfens, Ztschr. f. Tiermed. **1**: 241, 1897.

5. Schroeder, E. C., and Cotton, W. E.: The Bacillus of Infectious Abortion Found in Milk, 28th Ann. Rep., U. S. Dept. of Agric., 1911, pp. 137-183.

6. Traum, J.: Report of Bureau of Animal Industry, U. S. Dept. of Agric., 1914.

7. Evans, A. C.: Further Studies on Bacterium Abortus and Related Bacteria, J. Infec. Dis. **22**: 580-593 (June) 1918.

8. Keefer, C. S.: Report of a Case of Malta Fever Originating in Baltimore, Bull. Johns Hopkins Hosp. **35**: 6-14 (Jan.) 1924.

serologic test in use today. Huddleson[9] is using, to some extent, a method of diagnosis and prognosis of the disease in man based on the principle of the opsonic index. This method, however, is not generally used at the present time. The isolation of the causative organism is desirable, but it is not practical on account of the expense, the time and the large percentage of failures, especially when the disease is due to infection with the abortus variety. Except in rare instances, both clinical symptoms and positive serologic tests are necessary for a definite diagnosis.

The occurrence of active infection and clinical disease following exposure is largely dependent on four major factors: (1) the portal of entry, (2) the virulence of the particular strain or strains of the organism involved, (3) the number of organisms and (4) the resistance of the host.

The digestive tract was formerly thought to be the principal portal of entry of the Brucella organism. Experimental work, however, has shown that active infection results with much greater regularity and with a smaller number of organisms following their application to the conjunctiva than by way of the digestive tract. It has been demonstrated that the organism may invade the body through either abraded or intact skin. This is of particular importance to those groups of people whose occupations bring them in frequent contact with infected animals or raw meat or milk products. The digestive tract is still regarded as one of the principal portals of entry, both in man and in animals, particularly in animal to animal infection, and in consumers of raw dairy products among the human population.

The virulence of the three principal varieties is important. Since the melitensis variety is confined chiefly to goats, it may be disregarded in this section of the country except in rare instances. The goat population in Virginia is small, and a recent epidemiologic study of undulant fever in the state has shown that goats were not a factor in any of the cases studied.[10] Brucella melitensis var. melitensis infection of goat origin is primarily confined to tropical and subtropical regions where goats are raised extensively for dairy and meat production.

Brucella melitensis var. abortus and Brucella melitensis var. suis, occurring in cattle and swine respectively, are the predominant strains of both animal and human subjects. The lesions produced in guinea-pigs following inoculation with virulent Brucella melitensis var. suis are usually more extensive and attended with greater mortality than those following inoculation with Brucella melitensis var. abortus. Occasional strains of Brucella melitensis var. abortus, however, have been reported which had a virulence comparable with that usually associated with the suis variety. Under varying conditions a virulent strain of Brucella may become avirulent or an avirulent one may become virulent.

Many individuals may consume milk from an infected dairy for a long period of time or care for infected cattle without showing evidence of infection. If by chance, however, an individual repeatedly gets large doses of the virulent organism, his natural resistance may be overcome, and infection and clinical disease will result.

The question of dosage is especially important with the consumers of raw dairy products. Huddleson[11] made bacterial counts of nine samples of infective milk on which the cream was allowed to rise naturally at refrigeration temperature. The average count obtained was: cream, 218.7 Brucella organisms per cubic centimeter; bottom milk, 3 Brucella organisms per cubic centimeter, and whole milk, 26.4 Brucella organisms per cubic centimeter. It is evident that an individual who used raw contaminated cream would be much more likely to become infected than one who used whole milk or skimmed milk. The use of dairy products from small dairies is more likely to result in infection for the same reason, owing to the dilution factor. With large herds, milk from the same cow does not go to the same individual every day, and the number of organisms ingested would vary.

If the infective organism has sufficient virulence and gains access to the body in sufficient numbers, it may be able to break down the natural resistance with resultant disease. If, however, the normal resistance is low as the result of some debilitating disease or a recent operation, the probability of active infection under given conditions is greater. While securing case histories of undulant fever patients in Virginia, I found, in several instances, that the first symptoms were noted shortly following appendectomy, tonsillectomy or some unusual exposure.

Morales-Otero[12] has shown by experiments with human volunteers that infection occurred more readily through the abraded skin than through the digestive tract. Relatively large single doses of the organism that had been isolated for some time produced infection through the abraded skin, while the same cultures, when fed repeatedly in large doses, did not produce infection. Swine varieties were found to be more virulent than bovine and produced infection through the digestive tract when fed in smaller doses than the latter. Morales-Otero was unable to produce infection through the unabraded skin of man, but he did not consider this result conclusive.

Regardless of what the portal of entry may be, the organism penetrates the tissues of the body and enters the blood or lymph streams, remains there but a short time, and then localizes in some organ or organs. It possesses the ability to penetrate the normal mucosa of the digestive tract, the normal conjunctiva, the vaginal mucous membrane, the urethra, or the epithelium of the skin.

In cattle and swine the organism has a peculiar affinity for the reproductive organs and the neighboring lymph nodes. Foci of infection, however, may be found in other organs of the body, particularly the spleen and liver. Infection is rarely permanent in any of the organs of the body except in the mammary gland and regional lymph nodes, and even in these it is as a rule only transient, except in mature animals in which the mammary gland is functioning. During lactation the mammary gland offers a favorable location for reproduction, the infective organism being found in one or all four quarters. The live organism may be present in the mammary gland of cattle during the lifetime of the animal and be eliminated either intermittently or regularly in the milk. The presence of an

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10. Starr, L. E.: Undulant Fever and Its Relation to Brucelliasis in Cattle and Swine in Virginia, Tech. Bull. 48, Virginia Agric. Exper. Sta., 1933.

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almost constantly lactating mammary gland in cattle offers a reservoir for the reproduction and discharge of the organism. In swine the disease tends to be transient and not permanent as it is in cattle.

Brucella infection in the human being apparently follows the same course in the body as in animals, as evidenced by frequent involvement of the reproductive tract. The periodic functioning of the mammary gland and other peculiarities of the host or of the infective organism not thoroughly understood probably preclude the gland acting as a permanent reservoir of infection.

At the time of abortion or normal pregnancy in the case of infected cattle, hogs and goats, the organism is thrown off in myriad numbers with the fetus, placenta, amniotic fluid, and subsequent uterine discharges. Animal-to-animal and animal-to-man infection is most likely to occur at this period. At the time of miscarriages in women, as the result of Brucella infection, the same conditions apply. Fortunately such cases among women are rare, and even then modern hygienic practices in most cases eliminate the possibility of the transmission of infection in the human family.

Brucelliasis in horses is not manifested by abortion, as is found with goats, cattle and swine, but localizes principally in the ligamentum nuchae. Obstinate fistulas involving the ligamentum nuchae, the spinous processes of the cervical and thoracic vertebrae, the scapula and the contiguous structures are relatively common in horses. These fistulas are commonly known as fistulous withers or poll evil, depending on their anatomic location. The Brucella organism, either of the abortus or suis variety, has been found present in the wound discharges from a large percentage of horses so affected. Agglutination tests show most of them to react positively with Brucella antigen. Such animals, even though relatively few, are probably just as dangerous to the attendants as the positively reacting cow at the time of abortion.

Brucella infection in cattle is widespread, having been reported in almost every country in the world in which dairying is practiced. The percentage of infected animals has been found to be greatest in those sections in which dairying is the predominant industry. In such localities it is estimated that from 20 to 50 per cent of the dairy cattle are actively infected. In most of the Southern states, where the dairy industry is of minor importance, the percentage of positively reacting animals is probably much less, although little investigational work has been done and, with the exception of Virginia, little accurate information is available. In Virginia the proportion of infected dairy cattle is 10 per cent, which is comparatively low. This figure is based on the results of tests of 45,285 cattle. This number is approximately 10 per cent of the dairy cattle population of the state. Calculated on this basis, there are approximately 45,000 positively reacting cattle in Virginia. Experimental data indicate that from 10,000 to 25,000 of these are eliminating the live organism in their milk.

Comparative data are of interest with respect to the percentage of positively reacting cows in herds that have supplied raw dairy products to individuals who subsequently developed undulant fever and in the state as a whole. Seventeen dairy herds consisting of 362 animals that had supplied subsequent undulant fever patients with raw dairy products were tested in Virginia. Of this group 171 cattle, or 47.2 per cent, reacted positively. These results show a decided contrast with those for the state as a whole. They indicate that raw dairy products in some cases act as the transmitting agent of Brucella infection from animals to man and that such infection frequently results in undulant fever.

The results of tests for Brucella agglutinins, as previously reported,[10] are shown in the accompanying tables and in the map.

TABLE 1.—*Results of Agglutination Tests in 1931 and 1932 for Brucella Agglutinins in Dairy Herds in Virginia as a Whole, and in Herds that Furnished Milk to People Who Subsequently Developed Undulant Fever*

Dairy Herds That Have Furnished Milk to People Developing Undulant Fever								
Number of Herds	Number of Cattle	Average Number per Herd	Number Negative	Per Cent Negative	Number Suspicious	Per Cent Suspicious	Number Positive	Per Cent Positive
17	362	21.2	184	50.9	7	1.9	171	47.2

Dairy Herds Tested in Virginia in 1931 and 1932						
Number of Cattle Tested	Number Negative	Per Cent Negative	Number Suspicious	Per Cent Suspicious	Number Positive	Per Cent Positive
45,285	39,326	86.85	1,426	3.15	4,533	10.0

Human Brucella infection originating from swine has been shown to be relatively common in those states in which swine are raised extensively. This is particularly true in Iowa and other states of the corn belt. Agglutination tests of swine serums in various sections of the United States and Canada show that from 10 to 20 per cent react positively in low titers but only about 3 per cent in significant titers; that is, 1 in 100 or over. In Virginia, tests of 1,316 swine serums collected at abattoirs in Richmond, Charlottesville, Lynchburg, Harrisburg and Blacksburg showed that 312, or 23.7 per cent, reacted positively in low titers, and 42, or 3.2 per cent, in titers of 1 in 100 or over. It is evident that there is some Brucella infection in swine in Virginia. The clinical histories of the swine herds in the state, however, based on information obtained from many of the veterinarians and state regulatory officials, indicate little active infection.

TABLE 2.—*Results of Agglutination Tests of Swine Serums Collected from Abattoirs in Charlottesville, Richmond, Harrisonburg, Lynchburg and Blacksburg*

	Positive*		Suspicious†		Negative		Total Number
	Number	Per Cent	Number	Per Cent	Number	Per Cent	
Charlottesville	3	1.9	36	22.6	120	75.5	159
Richmond	28	4.0	208	27.0	546	69.0	792
Harrisonburg	1	0.4	55	20.2	216	79.4	272
Lynchburg	0	0.0	6	15.0	34	85.0	40
Blacksburg	0	0.0	7	13.2	46	86.8	53
Total	42	3.2	312	23.7	962	73.1	1,316

* Titers of 1 in 100 or over.
† Titers no higher than 1 in 25 or 1 in 50.

Undulant fever in man may be classified in part as the result of occupational hazards and in part from ingestion of raw contaminated dairy products.

Epidemiologic data collected by various investigators indicate that approximately 40 per cent of the cases of undulant fever occur among people employed on farms.

Farmers, dairymen, herdsmen and their families are exposed to infection almost daily while engaged in their occupational duties. They frequently aid cows at the time of abortion or normal parturition. Retained placentas and persistent uterine discharges are common in infected herds. While they are caring for such animals, the worker's hands and arms become soiled with infective uterine discharges or milk. The organism may penetrate the skin through scratches or abrasions on the hands or arms or even through the normal skin, if the parts are not cleansed promptly. The soiled hands may be inadvertently brushed across the eye, with the result that the infection may gain entrance to the body through the conjunctiva. The same hazards are assumed in the care of brood sows at the time of parturition, or for horses with fistulous withers or poll evil. The probability of infection in the case of contact with swine, however, is even greater, owing to the fact that the suis variety found in these animals is ordinarily much more virulent than the abortus variety found in cattle. Farmers, dairymen, herdsmen and their families ordinarily use raw dairy products, owing to the lack of pasteurization equipment, as well as care for infected animals. Since a large proportion of market milk contains the live, virulent organism, the farm group of the population is exposed to infection not only by direct contact but by the ingestion of raw infective dairy products.

TABLE 3.—*Number of Patients Falling in the Different Occupational Groups*

Occupation	Number	Occupation	Number
Farmers	15	County manager	1
Farm housewives	6	Railroad station agent	1
Farm laborers	7	Sales agent	1
Laborers not on farms	2	Railroad foreman	1
City housewives	9	Contractor	1
Teachers	2	School janitor	1
Ministers	3	Cattle dealer	1
Students	6	Occupation unknown	1
Operators, service station	2	No occupation	7
Physician	1		
Veterinarian	1	Total	70
Merchant	1		

The occupations of seventy patients with undulant fever studied in Virginia are shown in table 3.

Undulant fever has been found to be comparatively common among butchers and abattoir employees. The spleen, liver, kidneys, lymph nodes, and other organs, and at times the blood of infected cattle and swine, frequently contain the live virulent organism. In addition to the organs noted, Feldman [13] of the Mayo Foundation has recently reported that lesions involving the vertebrae of infected swine are common. Abattoir employees frequently have cuts on their hands from sharp bones or their knives. While they are handling infected meats, the infective organism may enter such breaks in the skin and set up active infection with resultant clinical attacks of undulant fever. This is especially true of employees caring for pork products.

Veterinarians are exposed to infection in its most virulent form, probably more than any other group of people. Almost daily while treating infected cattle and swine during the act of abortion or normal parturition, retained placentas, metritis and mastitis, their arms and hands are exposed to the live organism when it is in its most virulent state. Similar contact occurs during operations on horses for fistulous withers and poll evil. That such infection does occur is indicated by the results found with agglutination tests of blood serums from veterinarians. In most cases in which tests have been made, from 50 to 60 per cent of the individuals show the presence of Brucella agglutinins in their blood serums. Clinical undulant fever is comparatively high among veterinarians.

Erythema brucellum, an allergic reaction characterized by a smooth or papulovesicular erythema on that part of the arm or arms that comes in contact with the female reproductive tract of infected cattle during obstetric operations, is common among veterinarians. The reaction appears shortly after contact and persists for several hours, attended by intense inflammation and itching. With the papulovesicular form the ruptured vesicles frequently become infected with the common pyogenic organisms, resulting in a troublesome skin condition. The reaction continues to appear at irregular intervals for months or even years, until the sensitization of the individual disappears.

In routine agglutination tests of human serums collected during Wassermann surveys and of serums from apparently normal individuals, a small percentage have been found to show the presence of Brucella agglutinins in significant titers, 1 in 100 or over, and a much larger percentage in lower titers. In most of these cases the history does not indicate that the individual has ever suffered with clinical undulant fever. Especially striking are systematic agglutination tests of the serums of institutional patients who have used raw dairy products from badly infected herds. The serums of from 20 to 40 per cent of the patients show the presence of specific Brucella agglutinins, but only a small percentage show evidence of clinical disease. It is probable that a part of the individuals in whose serums specific agglutinins are found have had at some time subclinical attacks of the disease, which were regarded only as a slight indisposition and of little importance. It is evident that specific agglutinins may develop in a person following ingestion of raw contaminated dairy products, or by coming in direct contact with infected animals, without a recognizable clinical disease developing.

TABLE 4.—*Summary of Tests for Brucella Agglutinins with Human Serums in Virginia*

	Wassermann Group		Abattoir Group		Veterinary Group		Miscarriages in Hospital	
Human Serums	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Positive 1 in 25	11	1.0	3	2.2	8	20.0	0	0.0
1 in 50	19	1.8	2	1.5	8	20.0	0	0.0
1 in 100	2	0.2	2	1.5	6	15.0	0	0.0
1 in 200	1	0.1	2	1.5	0	0.0	0	0.0
1 in 400	0	0.0	1	0.7	3	7.5	0	0.0
Positive (1 in 100+)	3	0.3	5	3.7	9	22.5	0	0.0
Suspicious (1 in 25 or 1 in 50)	30	2.8	5	3.7	16	40.0	0	0.0
Negative	1,036	96.9	125	92.6	15	37.5	32	0.0
Total	1,069	100.0	135	100.0	40	100.0	32	0.0

Table 4 shows the results obtained in Virginia with serologic tests of Wassermann serums, serums from abattoir employees, serums from veterinarians, and serums from women who had had miscarriages in the University Hospital at the University of Virginia.

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Undulant fever was first recognized as an endemic disease in Virginia in 1927. It was made reportable by the state board of health in 1929. The records show that ninety-two cases were reported from Virginia during the period from 1927 to Jan. 1, 1932. During the course of this study, eighty-seven of these cases were investigated. Five of them could not be located, nor could definite information be obtained from the physicians in charge. Sixteen patients were found not to have had symptoms indicative of undulant fever, despite the fact that their serums reacted positively in some titer. There were seventy cases on which sufficiently complete information was obtained to justify their inclusion in this series.

Virginia is primarily an agricultural state, with the dairy industry playing an important rôle in the northern section as well as in the sections around Richmond and Norfolk. The chief agricultural activity along the eastern shore is truck raising, in the south-central section it is tobacco growing, and in the southwestern region it is sheep and beef cattle feeding. There are relatively few goats in the state, and hog raising is of minor importance. Only a few flocks of goats were tested, and no evidence of Brucella infection was found.

Of the seventy patients with undulant fever studied in Virginia, sixty-four were white and six Negroes. Most of the cases occurred in persons between the ages of 20 and 60. Although the disease is primarily one of late adolescence and adult life, infants and aged people are occasionally affected.

Forty-four, or 62.8 per cent, were males, and twenty-six, or 37.2 per cent, were females. The excess of males over females may be explained by the fact that a much higher percentage of men come in contact with infected animals than do women. With given conditions of exposure, the incidence of infection will be about the same for the two sexes.

The geographic location of the cases in Virginia indicates the close relationship of undulant fever with Brucella infection in cattle. For comparison, the location of the cases is shown on the map of Virginia, on which the distribution of Brucella infection in cattle by counties is shown. The location of cases of undulant fever is indicated by a dot on the map. A large percentage of the cases were found to be in the northern tier of counties, which correspond in general with the counties in which the greatest percentage of Brucella infection in cattle was found. Pasteurization of milk and cream in the larger towns and cities is evidently an important factor in the control of the disease among the consumers. On the farms and in the smaller towns, pasteurization is practiced to a very limited extent.

Brucella infection is primarily a disease of animals. Of the domestic animals only goats, cattle, hogs and possibly horses are of importance in the perpetuation of the disease in nature. Man is accidentally infected either by direct contact with infected animals or their discharges or by the ingestion of raw dairy products from infected dairy cattle or goats. It is generally considered in the United States that approximately 60 per cent of the cases of undulant fever are the result of the ingestion of raw contaminated dairy products and 40 per cent the result of direct contact with infected animals. In Virginia the source of the infection was found to be of cattle origin.

In view of the wide distribution of brucelliasis in dairy cattle and the almost universal use of raw dairy products except in the larger towns and cities, it is difficult for the layman to understand why there are so few clinical cases of undulant fever. This may be explained by the following facts: 1. Most of the strains of the abortus variety originating from cattle are comparatively nonpathogenic. 2. Clinical disease results only following contact with, or ingestion of, enormous doses of the abortus variety, except in the case of especially virulent strains. 3. Most people probably have some immunity, either natural or acquired. 4. Under given conditions active infection is less likely to result following ingestion of the organisms than following contact through the eye or the abraded skin.

Not over 7 per cent reacted positively.
Between 7 and 14 per cent reacted positively.
Over 14 per cent reacted positively.
Location of undulant fever cases.
In the counties not marked, less than 200 head tested.

Map of Virginia showing the distribution of Brucella infection in cattle and the location of cases of undulant fever.

In sections of the country where hogs are raised extensively, a part of the cases have been found to be of swine origin.

In the southwestern part of the United States where goats are raised extensively which originated from the southern part of Europe, the source of infection has been shown to be largely of goat origin.

It is evident that the source or sources of infection and modes of transmission of undulant fever in the human family will vary in different geographic areas according to the prevailing local conditions of animal and dairy husbandry and the consumption of raw dairy products.

Hardy [14] has reported one case of undulant fever in which the evidence suggested that the infection was secondary to a previous human case. The evidence was not regarded as conclusive. Since the live organisms may be present in the urine, feces and uterine discharges of patients with undulant fever, the attendants should exercise every precaution to prevent possible transmission of the infection.

The control and eventual eradication of undulant fever in man is dependent entirely on the control and eradication of the disease in domestic animals.

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THE SKIN ERUPTIONS OF CODEINE

MAX SCHEER, M.D.
Assistant Professor of Dermatology and Syphilology, New York Post Graduate Medical School, Columbia University; Adjunct Dermatologist and Syphilologist, Mount Sinai Hospital
AND
HARRY KEIL, M.D.
Clinical Assistant in Dermatology, Mount Sinai Hospital
NEW YORK

Codeine has been in use for the past fifty years and is today one of the most widely employed narcotics. As far back as 1832 it was extracted from opium and in 1881 its chemical formula was determined to be the methyl ester of morphine.[1] Despite its extensive use, proved cases of codeine exanthems due to hypersensitivity are rare. It is not even mentioned by Morrow [2] in his classic monograph on drug eruptions or by Lewin,[3] although the cutaneous manifestations of morphine and opium were well known to these authors.

In 1874, Bardet [4] studied the comparative effects of codeine, morphine and narceine. Using large doses of codeine (from 0.2 to 0.4 Gm.) he found that itching occurred almost constantly in himself as well as in several patients. In two instances he noted a more or less generalized associated erythema, once in himself and once in a female who could not tolerate morphine. These are examples of overdosage of codeine rather than hypersensitivity. In 1893, Pollak [5] reported an instance in a child, aged 1½ years, who, several days after the daily ingestion of codeine (0.002 Gm. a day), developed on the face pinhead papules surmounting a red base. The eruption spread to the upper part of the thorax. When the drug was withdrawn, the rash faded in one day. The author stated that this was the first example of a codeine exanthem. This observation is, however, less significant because simultaneously dilated pupils developed, a sign that implies overdosage. In the following year (1894) the first scientifically established case was described by von Essen,[6] in whose patient, a woman, aged 31, a bright erythema developed on the inner surfaces of the arms, the lateral aspects of the trunk, the abdomen, and the inner sides of the thighs and knees. The rash occurred after the ingestion of a cough mixture containing ipecac and codeine. Only from one-third to one-half grain (0.02 to 0.03 Gm.) of codeine had been taken in all. The eruption was at first associated with only slight pruritus. The codeine was removed from the cough mixture, whereupon the erythema disappeared in two days. The patient subsequently received one-third grain of codeine as a diagnostic test. Three hours later she experienced chilly sensations, followed by redness of the hands and a gradual spread of the erythema over the entire body, with the exception of the face. The eruption was of a scarlet red hue, caused intense itching and disappeared in four and a half days, leaving some desquamation. In addition, the patient received one-sixth grain (0.01 Gm.) of morphine without any effect. Von Essen therefore not only proved that codeine was the cause of the exanthem but also demonstrated a specific sensitivity in his case. The more recent literature contains only a few additional instances of true hypersensitivity to codeine.[7]

Aside from these, there are several cases in which codeine has been ingested in overdosage either therapeutically, through error, or with suicidal intent. The usual result has been the occurrence of a generalized scarlatiniform eruption associated with severe itching.[8] However, marked pruritus may be the only cutaneous manifestation,[9] and occasionally the skin may not be affected at all, with the possible exception of profuse sweats.[10]

Despite the rarity of published cases, we feel that there are probably many more instances of codeine hypersensitivity, which go unrecognized merely because this drug is not generally regarded as capable of producing exanthems. The present case is reported in order to attract attention to this cause of drug eruption, particularly in those obscure instances in which a scarlatiniform rash occurs. The case possesses other features of interest, which will be subsequently detailed.

REPORT OF CASE

L. H., a woman, aged 48, admitted to the hospital, Aug. 11, 1933, had been suffering from malaise, anorexia, and severe constant frontal headache associated with a temperature ranging around 103 F. for the past week. The onset had been sudden. On the fifth day of illness, petechial spots were noted on the chest and abdomen. On admission she appeared stuporous and acutely ill. The temperature was 105.6, the pulse rate 96 and the respiratory rate 28. Her face, lips and nail beds were slightly cyanotic. Rigidity of the neck was not present. She had an occasional nonproductive cough. There was slight dulness at the right base on percussion and fine râles at both bases. The heart was slightly enlarged to the right and the sounds were distinct although of poor quality. The second aortic sound was louder than the second pulmonic sound. The spleen was not palpable. The skin presented the typical cutaneous manifestations of endemic typhus (Brill's disease) characterized by a generalized maculopapular and flat purpuric eruption over the trunk and to a lesser degree on the upper extremities inclusive of the proximal part of the right palm. The individual maculopapular lesions varied in size from a match head to a split pea, and many could not be blanched on pressure. There was a suggestive subcuticular mottling. The blood count showed only a moderate secondary anemia.

The further course was characteristic of typhus fever. The rash faded completely within the next two days. By the fifteenth day of illness the temperature had dropped to normal by slow lysis, at which time the headache was almost gone and the patient no longer stuporous. The blood culture and the Widal reaction were negative. A Felix-Weil reaction was positive (1:40) on admission but subsequently reached a diagnostic titer (1:320) at a time when the temperature was normal.

August 16, 1 grain (0.065 Gm.) of codeine was given by mouth as a sedative. That evening the patient complained of itching. On the lower part of the back and abdomen there was an erythematopapular and follicular eruption. By the following day it had spread over the entire abdomen, back and chest and now appeared as a diffuse erythema accompanied by severe pruritus. Careful inspection revealed a definite follicular arrangement with a broad zone of erythema around the individual follicles, the coalescence of which produced a scarlatiniform appearance. Within the next twenty-four hours the rash faded to a great degree but the itching persisted for another day. The diagnosis of the eruption was not clear. The original follicular character of the lesions had suggested prickly heat. The possibility of an enema rash was also considered. The

From the dermatologic service of Dr. W. J. Highman, Mount Sinai Hospital.

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rapid spread of the eruption with its scarlatiniform appearance and the intense itching was suggestive of a drug rash but the only medicament administered had been a single dose of codeine. Moreover, no one in the medical or dermatologic departments at the time had ever personally observed an eruption after the use of codeine. Nevertheless, the original dose of this drug was repeated orally at night (10:30 p. m.). The patient could not sleep because of the resultant intense itching, and the next morning a widespread scarlatiniform rash was visible over the trunk, abdomen, lower extremities, and lower half of the face. It was now clear that we were dealing with an instance of hypersensitivity to codeine. Within the following forty-eight hours the rash disappeared without any desquamation and the pruritus diminished considerably.

Three days later a patch test of codeine phosphate solution (1 grain per ounce) was applied to the right arm at 5:45 p. m. Several hours later the patient complained of a generalized pruritus, which became so severe locally that she removed the patch during the night. The following day the test area was the site of a swollen scarlet red eruption. She also complained of a mild pruritus over the remainder of the body, although there was no corresponding eruption. This could be best explained by the hypothesis that this sensitive individual had absorbed a small amount of the drug through the skin. On the following day, codeine phosphate, pantopon and opium were applied to the left forearm in powder form and Magendie solution (morphine sulphate) to the right forearm, all with negative results.

Blood was taken from the patient in an attempt to demonstrate antibodies. The serum was injected into two normal individuals, each of whom received two wheals in the left arm. About ten minutes later, a few minims of codeine phosphate solution was injected into the upper wheal. The lower one was used as a control. Within five minutes the codeine-serum site showed a marked urticarial effect with widespread erythema and striking pseudopod formation. For a moment it was thought that a positive Prausnitz-Küstner reaction had been obtained until it was found that codeine alone injected into the opposite arm produced the same erythemato-urticarial effect with pseudopod formation. Five other normal individuals reacted similarly to the intracutaneous injection of this drug. In this respect, codeine behaves very much like morphine that has been used to produce wheals artificially. In order to see the effect of the oral administration of codeine on the control serum sites of the two individuals, two doses of one-half grain each of codeine phosphate were administered. The results were negative; there was no itching, general or local, and no eruption.

Further tests were refused by the patient, whose fear of a repetition of the itching prevailed over our endeavors, so that scratch tests, quantitative intracutaneous tests with codeine and its various salts, and the Urbach-Königstein blister method for the detection of local antibodies could not be attempted.

COMMENT

Our case is an instance of true hypersensitivity to codeine, a single dose of 1 grain being sufficient to produce a generalized, severely pruritic, scarlatiniform rash. The eruption could be reproduced at will by the ingestion of the drug. An unusual feature was the positive skin patch test with codeine phosphate solution (erythemato-urticarial reaction) whereas a subsequent similar test with a solution of morphine sulphate was negative. This would seem to indicate a specific hypersensitivity to codeine, which is all the more significant since chemically the latter differs from morphine only in the possession of a methyl group. In the instance recorded by von Essen the patient developed a rash after the ingestion of codeine, whereas morphine sulphate was without effect. Occasionally, however, a patient may be sensitive to both drugs as well as to others (case 2, Wolters).

That patch tests with powders are of little value (apart from those in which the skin is simultaneously scratched with sodium hydroxide) is demonstrated by the negative reaction to codeine phosphate powder in contrast to the positive result when the same drug was applied to the skin in solution form. A positive skin patch test in instances of drug hypersensitivity is in general very uncommon.

Since codeine appears to be excreted unchanged, the problem of antibody formation is much more simple than in the case of other drug eruptions whose existence seems to depend on decomposition products; for example, phenolphthalein eruptions. In our limited studies, we were unable to demonstrate antibodies in the blood serum, using a modified Prausnitz-Küstner technic (serum locally plus codeine by mouth). The direct Prausnitz-Küstner method (serum and codeine locally) could not be used advantageously, since codeine of itself seems normally to produce an erythemato-urticarial reaction with pseudopod formation when injected intracutaneously, imitating morphine in this respect. Unfortunately, the demonstration of local antibodies in the tissue fluids could not be attempted, a procedure that would have great theoretical interest in instances of codeine hypersensitivity. Kyrle attempted similar experiments in guinea-pigs. From his results, he concluded that the animals injected with serum from a codeine-sensitive individual reacted more strikingly to the further injection of codeine than the normal control animals. However, he admitted that these experiments were not clear cut, since guinea-pigs respond to codeine in a variable fashion. The so-called hypersensitive animals exhibited the symptoms of codeine intoxication, but in no instance could one speak of anaphylaxis. The demonstration of antibodies to codeine or to a hypothetical codeine-protein compound is still lacking.

In nearly all the instances of codeine exanthem, a scarlatiniform eruption has appeared usually within several hours after the ingestion of the drug. In general, pruritus has been associated with the eruption. Usually itching is a major symptom and in our case was so severe that the patient suffered more from its effects than from typhus fever. Itching with or without an exanthem is an almost constant symptom of codeine overdosage. It is occasionally absent in instances of codeine hypersensitivity, as in the case of Kyrle, or it may occur in a second or subsequent appearance of the rash (von Essen). In one instance (case 1, Wolters), the exudative reaction was sufficient to cause swelling of the face, hands and eyelids. In another instance (case 2, Wolters), a morbilliform eruption was reproduced in a patient who had just gone through an attack of measles. Desquamation in the wake of a codeine exanthem is a variable feature. There are no definite instances of an enanthem. When the drug is stopped, the eruption disappears in from one day to several days. If the etiology of the exanthem is unrecognized and the drug is continued, intolerable pruritus and burning of the skin occur with the development of a psychotic train of symptoms. There is no instance of death due to codeine intoxication except in that reported by Wagemann, but in that case an accidental aspiration bronchopneumonia may have been the cause of death.

In our case we were fortunate in observing the original follicular character of the eruption on the trunk. As soon as the rash takes on a generalized scarlatiniform appearance, this morphologic feature is difficult to recognize. The exanthem may be characterized as microfollicular with a broad zone of erythema around individual follicles, followed by such rapid

coalescence as to produce a scarlatiniform effect. This point has been emphasized by Dittrich, who believes that the drug is probably excreted unchanged through the follicles.

In one of the cases reported by Dittrich, the eosinophil count increased to 16 per cent. Eosinophilia has been demonstrated in very few drug eruptions, the classic example being the nirvanol exanthems, in which it is practically a constant accompaniment.

SUMMARY

Our proved case of codeine exanthem due to hypersensitivity to this drug is the seventh case reported in the literature. The characteristic rash seems to be follicular in location with a broad zone of erythema around the follicles. The rapid coalescence of the erythema produces a scarlatiniform appearance. Pruritus is usually a striking symptom. An unusual feature of the case reported was the presence of a positive skin patch test. Antibodies could not be demonstrated in the blood. Further work in this direction is required, since our attempt was of necessity limited in its scope.

509 Madison Avenue.

STUDIES OF HYPERSENSITIVENESS TO THE EMANATIONS OF CADDIS FLIES (TRICHOPTERA)

IV. DIAGNOSIS AND TREATMENT OF FORTY-THREE CASES OF ASTHMA AND HAY FEVER

SALVATORE J. PARLATO, M.D.

Director of the Asthma and Hay Fever Department, Buffalo Eye, Ear, Nose and Throat Infirmary, Wettlaufer Clinic; Attending Allergist, Millard Fillmore and Buffalo Columbus hospitals

BUFFALO

Long before it was demonstrated that the emanations of the caddis fly cause summer asthma and hay fever,[1] these flies were known to be of some economic value. They rank very high as food for fresh water fish. Fishermen use them for bait. The federal government assists in their propagation and distribution whenever it seeks to replenish the fish supply of any fresh water body. It may do this to help the trout in some mountain river or the perch and pike of the Great Lakes. So, while a resident of any city along the Atlantic sea coast may not have contact with these flies at home, a fishing trip or a summer vacation to the Adirondacks or to the Great Lakes will expose him to the emanations of the caddis fles. An interesting example is that of a New York City physician,[2] who reported severe hay fever and asthma while visiting on the lake shore near Erie, Pa., during the summer of 1930. Swarms of flies attracted his attention. He especially noted his symptoms when a fly happened to brush his face. He collected a number of the flies before he returned to New York. For the rest of that summer and all during the year 1931 he had no further symptoms of hay fever or asthma. The flies that were sent to me for identification were caddis flies.

My purpose in this paper is to report a series of cases of caddis fly hypersensitiveness which have been diagnosed and treated during a period of five years, 1928-1932, inclusively. The diagnosis can be made by the usual skin, ophthalmic and passive transfer tests, an aqueous extract of the whole fly being used.[1] The flies were secured from clean sources, such as the use of insect nets near the Niagara River at night time or catching them on large pans, which were placed on a porch or veranda near an electric light. All extraneous matter was first carefully removed. With a buffered saline solution, a clear brown extract was obtained. The extract was then put up in various dilutions, the total nitrogen content being used as a guide. For routine testing, the method that Dr. Robert A Cooke and his associates have employed very effectively in their clinic at the Roosevelt Hospital was followed; namely, solutions of 0.001, 0.01 and 0.1 mg. of nitrogen per cubic centimeter were used for the qualitative and quantitative determinations of hypersensitiveness.

Routine tests were made on 694 private patients and 156 patients in the hay fever and asthma department of the Buffalo Eye, Ear, Nose and Throat Infirmary,

Fig. 1.—Habitat and life cycle of the Caddis fly (T. limnophilidae). Its eggs are laid in any shallow fresh water. Several caddis worms are seen on the bottom of this river. A caddis pupal case is floating near the top of the water. Perched on the water lily is an adult fly (natural size) which is just emerging from the water. A moderate wind will drive the flies inland in great swarms. From a painting by Hashime Murayama, after Paul Mery. Copyrighted by the National Geographic Society.

Wettlaufer Clinic. The intradermal method was used exclusively. Besides the caddis fly extract, all patients were tested with the inhalants, foods, pollens and a number of miscellaneous allergens. One was considered hypersensitive to the caddis fly only when the skin gave repeated positive reactions and then was confirmed by a positive reaction in the eye, which was produced by dropping a little of the extract on the conjunctiva. To remove any possible doubt, a little "dust" from the wings of the fly was placed on the conjunctiva and almost immediately there followed a reddening and itching of the eye with profuse lacrimation. In every instance of suspected sensitivity in which

1. Parlato, S. J.: A Case of Coryza and Asthma Due to Sand Flies (Caddis Flies), J. Allergy 1: 35 (Nov.) 1929.
2. Personal communication to the author.

the passive transfer test was performed, the specific caddis fly reagins were readily demonstrated. Of a total of 850 allergic patients who were tested, 43 positive ones were found, an incidence rate of 5 per cent. These figures definitely establish the fact that the allergen is not rare or very uncommon.[3]

Fig. 2.—A caddis fly mounted on a glass slide shows how easily it sheds its hair and epithelial emanations. The lighter areas on both pairs of wings indicate the denuded sections. The inhalation of these fine air-borne particles cause asthma, hay fever and even hives. Reduced from a photomicrograph with a magnification of 18 diameters.

Specific treatment produced a hyposensitization or "desensitization," which clinically was evidenced by a complete or at least satisfactory relief of symptoms. The effectiveness of the treatment was put to a severe test, since most of the forty-three patients continued to

TABLE 1.—*Summary of Results of Specific Treatment for Caddis Fly Hypersensitiveness*

Number of patients treated with caddis fly extract		32
Complete or over 90% relief	23 or 72%	
70 to 90% relief	7 or 22%	
Less than 70% relief	2 or 6%*	
Number of patients who moved from caddis fly habitats (all obtained complete relief)		6
Number of patients who failed to return for treatments (whereabouts not known)		3
Number of patients who were not given specific treatments and had recurrence of symptoms; studied as controls		2
Total number of fly sensitive cases		43

* These two patients did not report in time to receive a sufficient number of treatments.

live or work near the habitat of this fly. The injections of the caddis fly extract were given subcutaneously into the arm. The first dose was usually 0.05 or 0.1 cc. of the weakest solution that gave a positive skin reaction. The amount was gradually increased by 0.05 or 0.1 cc., depending on the severity of the previous injection. The interval between the inoculations was one week for preseasonal treatment and from three to five days for patients who were seen during the fly season. Only a few constitutional reactions of moderate degree occurred following the injections, and these were promptly relieved by the administration of epinephrine. The number of doses that each patient received varied according to the degree of sensitivity and the amount of contact with the flies which could not be avoided.

TABLE 2.—*Results of Specific Treatment in Relation to the Caddis Fly Season*

Number of patients treated during the fly season (seasonal treatment)		20
Over 90% relief	11	
From 70 to 90% relief	7	
Less than 70% relief	2	
Number of patients treated before the fly season (preseasonal treatmen		9
Over 90% relief	9	
From 70 to 90% relief	0	
Less than 70% relief	0	
Number of patients treated before and during the fly season (combined method)		3
Over 90% relief	3	
From 70 to 90% relief	0	
Less than 70% relief	0	
Total number of treated cases		32

Whenever one reported late in the summer, preseasonal treatments were arranged for the spring months of the succeeding year.

Of the total forty-three diagnosed cases, thirty-two received specific treatments. The high percentage of successfully treated cases, as shown in table 1, leads one to believe that the atopic factor of the fly emanations may be compared to that of horse dander, dog hair and other well known animal air-borne excitants and not to that of the pollens of grasses and weeds which are found in the atmosphere at the same time of the year.

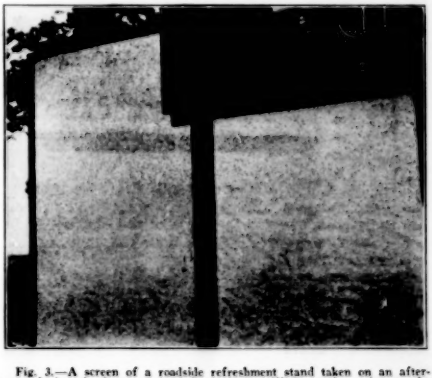

Fig. 3.—A screen of a roadside refreshment stand taken on an afternoon during the latter part of June, 1931. Within a few minutes, the two panels were covered with the tiny flies. (This picture and figure 4 were made by Dr. Herbert J. Rinkel of Kansas City, Mo., while on a visit to the Niagara River with the author.)

A follow-up record of patients who were treated as far back as 1928 and 1929 shows that these patients have had no recurrence of their allergic symptoms although they received no further treatments. I am convinced that permanent relief can be achieved from a single course of treatment consisting of from fifteen to

[3] J. Parlato, S. J.: The Sand Fly (Caddis Fly) as an Exciting Cause of Allergic Coryza and Asthma: II. Its Relative Frequency, J. Allergy 1: 307 (May) 1930.

eighteen graduated doses, which can be administered during any part of the year, preferably before the fly season (table 2).

A number of interesting facts have been elicited from a review of these caddis fly cases. There are thirty-four male and nine female patients in this series. The

Fig. 4.—A close-up view taken shortly after figure 3, showing how easily the flies made contact with a person standing nearby.

ages ranged from 7 to 55 years, the average being 27 years. Thirty-two of the entire forty-three patients reported that their symptoms began before the age of 21. The chief complaints were as follows: Eight patients had hay fever, nine had asthma and twenty-six had hay fever and asthma. Hives and eczema were also reported in nine of these three groups. Another important diagnostic point is that every one of these patients either lived or worked near the habitat of the fly; namely, Lake Erie or the Niagara River. Moreover, it was noted that they all either had allergic symptoms or were made worse from the middle of June to about the middle of September, the time when the flies appear. As a matter of fact, twenty-six of the thirty-two treated patients applied for medical aid during these months, usually on the day after a fresh storm of flies was encountered.

This hypersensitiveness is apparently readily acquired through exposure to these flies. In one case, the family history is unknown because the patient was deserted by both parents soon after birth. Fourteen, or one third, of the remaining forty-two patients reported a positive heredity, and in only one instance both parents were allergic. In striking contrast, twenty-eight, or two thirds, gave a negative family history. Cooke and Vander Veer,[4] Spain and Cooke,[5] Balyeat [6] and Rowe [7] reported a positive heredity in from 48 to 56 per cent of their allergic cases. In view of the generally accepted concept that the allergic state is inheritable and, on the other hand, that the percentage of positive family history in this series is low, there is ample justification for the belief that hypersensitiveness to the caddis fly can be acquired.

4. Cooke, R. A., and Vander Veer, Albert, J.: J. Immunol. **1**: 201 (June) 1916.
5. Spain, W. C., and Cooke, R. A.: J. Immunol. **9**: 521 (Nov.) 1924.
6. Balyeat, R. M.: South. M. J. **21**: 554 (July) 1928.
7. Rowe, A. H.: The Treatment of Bronchial Asthma, J. A. M. A. **84**: 1902 (June 20) 1925.

A problem that allergists are confronted with every day is the management of multiple sensitive patients. Often it is difficult to decide which is the primary or most important excitant. In this series there was a total of sixteen cases in which the caddis fly was the only exciting cause. In nine others it was found to be the principal etiologic factor, while in the remaining eighteen it was considered a contributory factor. The best results with specific treatment was obtained in the first and second of these groups. In the third group, the truly multiple sensitive cases, it was necessary to augment the caddis fly treatments with injections of extracts of other air-borne excitants and with a careful rearrangement and supervision of the diet.

SUMMARY

1. The caddis fly has a wide distribution in America and Europe. The numerous lakes and rivers in the United States are the habitats of this common fly.

2. Its emanations are made up of scaly epithelium and easily identified hairs. These emanations are readily shed. They are very viable and are found in the air in considerable quantities during the summer months. Allergic symptoms are caused by the inhalation of these fine particles.

3. In a series of 850 allergic patients who were tested during the years 1928-1932 inclusively, forty-three, or 5 per cent, were found to be hypersensitive to the caddis fly.

4. Thirty-two patients received inoculations of the caddis fly extract. The results indicate that specific treatment can be effectively given during as well as before the fly season, although the latter is recommended. A follow up of these patients has shown that

Fig. 5.—A pollen plate was exposed in a park in Buffalo near the Niagara River. The presence of these flies in any community can be determined by looking for the crescent shaped hair on glass slides that have been exposed for twenty-four hours during any of the summer months. Reduced from a photomicrograph with a magnification of 200 diameters.

the hyposensitization or "desensitization" has endured as long as four years. It is substantially believed that one course of treatment will render a patient permanently free from allergic symptoms.

5. Caddis fly sensitivity should be remembered when one is considering the etiology or the exciting causes of

a patient whose asthma and hay fever occur or are worse during the summer months and whose residence or employment brings him in contact with these flies. It is believed that a complete diagnostic study of this group of patients will reveal additional cases of caddis fly hypersensitiveness in other sections of this country and Canada.

715 Delaware Avenue.

PROTOZOAL INFESTATIONS OF AMERICAN INDIAN CHILDREN

WILLIAM B. OWEN, M.A.
RALPH F. HONESS, M.A.
AND
JAMES R. SIMON, M.A.
LARAMIE, WYO.

That amebiasis and other protozoal infections are conditions not peculiar to tropical countries, but are frequently encountered in all temperate climates, is a fact amply verified wherever careful observations have been made. Through the work of Boeck and Stiles,[1] Meleney, Riley,[2] Faust [3] and others, a large body of information has been accumulated relative to the prevalence of intestinal protozoa in the white race of the United States. Furthermore, Meleney, Bishop and Leathers [4] have obtained considerable data on these infections in the Negro population of Tennessee.

Notwithstanding the information made available by the aforementioned studies, little is known in regard to the prevalence of these infections in the North American Indians. Two principal reasons probably account for this fact. In the first place, most of the large Indian reservations are relatively isolated from centers of research in parasitology. And, secondly, amebic dysentery is either of rare occurrence in the native Indians, or, if common, it has never commanded public attention. With these facts in mind, it seemed worth while to make a survey of some of the Indians in Wyoming for intestinal protozoa. The data here presented are the results of an examination of eighty-three Indian boys between the ages of 6 and 17 and of seven adults.

SOURCE OF MATERIAL

The individuals examined in this survey were members of the Arapahoe tribe who live on the Shoshone Indian Reservation in central Wyoming.

The sanitary and hygienic practices of these people are not unlike those found among most American Indians. The greater percentage of them live in mere shacks and only a few possess comfortable houses. Modern plumbing fixtures are not found in their homes. A few have outdoor privies, but a greater number of the families defecate in some convenient place of concealment near the home. In matters of personal cleanliness they are equally careless.

On that part of the reservation occupied by the Arapahoe tribe is located the St. Stephens Mission School for Indian children. The eighty-three boys examined were taken from the group of children in attendance at this institution, while the seven adults were residents of the vicinity.

METHODS OF STUDY

The St. Stephens Mission School is located approximately 250 miles from the University of Wyoming. Fecal samples were collected in suitable containers and shipped to the zoology department of the university, where all microscopic examinations were made. The stools were from two to five days old when received in the laboratory; thus only those species of protozoa which encyst were detected. In making the microscopic examinations a technic essentially the same as that used by Meleney was employed. This method consists of emulsifying the fecal sample in water, concentrating the cyst with a centrifuge, and then staining with an iodine solution. The preparation was then examined with a Spencer binocular microscope, 15 power oculars and the 4 mm. objective being used. In all doubtful infestations of Endamoeba histolytica fecal smears were fixed in Shaudinn's fluid and stained with iron hematoxylin.

The eighty-three boys were examined on an average of 1.2 times each, while only one stool sample was secured from each of the adults.

PRESENTATION OF THE DATA

An analysis of the results show that seventy-eight, or 93.9 per cent, of the eighty-three boys were positive for one or more species of intestinal protozoa. In these seventy-eight positive cases there were a total of 174 separate infestations, or an average of 2.2 species per positive case. The number of separate infestations and incidence of each species is given in table 1. Since these data are based on an average of 1.2 examinations per individual, the percentages are lower than the actual incidence of each species under consideration. Yet, when no attempt is made to correct the results to a six-examination basis, as Kessel and Svensson,[5] and Faust [3] have done, the incidence figures in table 1 stand among the highest on record for any group of individuals to be studied in a temperate climate, and they are in many cases as high as those recorded from natives in the tropics.

TABLE 1.—*Incidence of Intestinal Protozoa in Eighty-Three Indian Boys from the Arapahoe Tribe in Wyoming*

Species of Protozoa	Number Infested	Percentage Infested
Endamoeba coli	57	68.6
Endolimax nana	46	55.4
Iodamoeba williamsi	29	34.9
Endamoeba histolytica	22	26.5
Giardia lamblia	18	21.6
Chilomastix mesnili	2	2.4

The incidence for Endamoeba histolytica, as reported from different regions in the United States, is seldom over 10 per cent. Therefore the figure of 26.5 per cent for this species in the Indian children is extremely high and appears to be exceeded only by the data of Meleney, Bishop, and Leathers,[4] who report an incidence as high as 41 per cent for certain communities in Tennessee. As compared with data from tropical countries, Hegner, Johnson and Stabler [6] give 16 per

From the Department of Zoology, University of Wyoming.

1. Boeck, W. C., and Stiles, C. W.: Studies on Various Intestinal Parasites (Especially Amoebae) of Man, Bull. 133, Hyg. Lab. U. S. P. H. S., 1923.

2. Riley, W. A.: Protozoal Infestation of Ex-Service Men in Minnesota, J. A. M. A. **92**: 1661-1662 (May 18) 1929.

3. Faust, E. C.: A Study of the Intestinal Protozoa of a Representative Sampling of the Population of Wise County, Southwestern Virginia, Am. J. Hyg. **11**: 371-384 (March) 1930.

4. Meleney, H. E.; Bishop, E. L., and Leathers, W. S.: Investigations of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee: III. A State-Wide Survey of the Intestinal Protozoa of Man, Am. J. Hyg. **16**: 523-539 (Sept.) 1932.

5. Kessel, J. F., and Svensson, Ruth: A Survey of Human Intestinal Protozoa in Peking, China, China M. J. **38**: 961 (Dec.) 1924.

6. Hegner, R. W.; Johnson, C. M., and Stabler, R. M.: Host Parasite Relations in Experimental Amoebiasis in Monkeys in Panama, Am. J. Hyg. **15**: 394-443 (March) 1932.

cent for 156 natives in Panama. Faust and Wassell [7] report it in 50 per cent of fifty-seven Chinese hospital patients. Faust [8] found it as high as 72.7 per cent of the population in certain unsanitated areas in Panama.

In comparing the total incidence percentages of different protozoan surveys, a figure known as the protozoan percentage incidence has come into use. This

TABLE 2.—*Comparison of Percentage Positive and Average Number of Infestations per Positive Case in Various Surveys*

Individuals Examined	Total Number Examined	Percentage Positive	Average Number Infestations per Positive Case
Present survey of 83 Indian boys	83	66.9	2.23
Faust,[3] Virginia	400	55.9	1.44
Riley,[5] ex-service men in Minnesota	500	32.4	1.20
Faust and Wassell,[7] Wuchang, China	57	73.7	1.80
Owen,[10] orphanage in Oregon	42	71.0	1.86
Boeck and Stiles,[4] United States	8,029	39.9	1.56
Boeck,[9] industrial school children in United States	83	77.1	1.51
Hegner, Johnson and Stabler,[6] native Panamans	156	51.0	1.63

figure is computed from the total number of individuals examined and the total number of infestations. Thus, both positive and negative cases enter into its derivation. It is believed that a better method in comparing such incidence data is to use two figures; namely, the percentage positive and the average number of infestations per positive case. The percentage positive tells how general infestations are in the group examined, while the average number of infestations per positive case expresses the degree of occurrence or the frequency of multiple infestations of intestinal protozoa as a whole. These two figures give in a quantitative manner both the spread and the intensity of infestations in the subjects examined. A study of these comparable data, which have been compiled from various sources and presented in table 2, reveals the significant fact that both the percentage positive and the average number of infestations per positive case are higher for the eighty-three Indian boys than for any of the other groups. The only comparable figures in the series are those of Faust and Wassell [7] for the fifty-seven Chinese hospital patients, of Boeck [9] for the industrial school children, and of Owen [10] for the orphanage children in Oregon.

The frequency with which multiple infestations were encountered is worthy of note. A study of table 3 shows that in twenty-six cases a single protozoan species was found, in twenty-six cases two species were noted, in ten patients three species were present, in fourteen cases four species, and in two cases five species were discovered. These data show that only 33 per cent of the positive individuals were harboring a single species, while 67 per cent had two or more separate infestations.

Of the seven adult Indians examined, only two were positive and both of them showed double infestations. One, a man, aged 36, was harboring Endamoeba coli and Iodamoeba williamsi. The other, a man, aged 86, was infested with Endamoeba coli and Endolimax nana. These data are not sufficient to draw any conclusions in regard to protozoan infestations in the adult Indians.

7. Faust, E. C., and Wassell, C. M.: Preliminary Survey of the Intestinal Parasites of Man in the Central Yangtze Valley, China M. J. **35**: 1-30, 1921.

8. Faust, E. C.: The Incidence and Significance of Infestations with Endamoeba Histolytica in New Orleans and the American Tropics, Am. J. Trop. Med. **11**: 231-237 (May) 1931.

9. Boeck, W. C.: A Protozoan Survey of an Industrial School for Boys and Girls, J. Parasitol. **7**: 191, 1921.

10. Owen, W. B.: Protozoan Infestations of Children: A Study in an Orphanage in Oregon, Northwest Med. **31**: 186-188 (April) 1932.

GENERAL COMMENT

Since these eighty-three Indian boys were in residence at the mission school during the period in which the examinations were made, it might be inferred that they represent typical institutional cases. However, it should be noted that they make frequent visits with their families during the period in which school is in session and all of them spend the summer months at their homes on the reservation. The mission school is equipped with every modern convenience. The children live in dormitories provided with drinking fountains and shower baths. They dine in a mess hall that reflects every aspect of cleanliness. A comparison of the sanitary and hygienic practices which the children are compelled to observe at the mission school with those prevalent among the Indian families leads to the belief that a large percentage of the positive cases are infested while at home.

The incidence of 26.5 per cent for Endamoeba histolytica in the eighty-three Indian boys raises the question of whether it is not of common occurrence in all the American Indian tribes. Certainly, their sanitary and hygienic practices represent optimum conditions for the propagation of all intestinal protozoa.

As regards the question of how many of the cases positive for Endamoeba histolytica presented a history of dysentery or other disorders symptomatic of amebiasis, we were not able to determine. Yet it is not likely that the American Indian as a race is totally immune to the pathogenic propensities of this organism. If this is true, it is indeed an exception to our knowledge of the biology of this species.

TABLE 3.—*Frequency of Multiple Infestations and Various Combinations of the Six Species of Protozoa Encountered in the Eighty-Three Indian Children*

Species and Manner of Combinations	Times Occurred
Single Infestation	
Endamoeba coli	10
Endamoeba histolytica	3
Endamoeba nana	6
Giardia	4
Iodamoeba	3
Double Infestations	
Endamoeba coli and E. histolytica	3
Endamoeba coli and E. nana	12
Endamoeba coli and Giardia	2
Endamoeba coli and Iodamoeba	4
Endamoeba histolytica and E. nana	1
Endamoeba histolytica and Giardia	1
Endamoeba nana and Iodamoeba	3
Triple Infestations	
Endamoeba coli, E. histolytica and E. nana	2
Endamoeba coli, E. histolytica and Iodamoeba	1
Endamoeba coli, E. nana and Giardia	2
Endamoeba coli, E. nana and Iodamoeba	4
Endamoeba coli, Giardia and Iodamoeba	1
Quadruple Infestations	
Endamoeba coli, E. histolytica, E. nana, Giardia	2
Endamoeba coli, E. histolytica, E. nana, Iodamoeba	7
Endamoeba coli, E. nana, Giardia, Iodamoeba	4
Endamoeba coli, E. nana, Iodamoeba, Chilomastix	1
Quintuple Infestations	
Endamoeba coli, E. histolytica, E. nana, Giardia, Iodamoeba	1
Endamoeba coli, E. histolytica, E. nana, Giardia, Chilomastix	1

These data also raise the question of whether Endamoeba histolytica is not a contributing factor to many of the intestinal disorders so common among American Indians. Work [11] states that the most common disorders affecting the mass of Indians are those of the gastro-intestinal tract. These disorders, he believes, are due to faulty feeding in infancy. The data at hand offer no proof that Endamoeba histolytica is widely distributed among the American Indians or

11. Work, Hubert: Indian Medical Service, Mil. Surgeon **55**: 425-428 (Oct.) 1924.

that it is a contributing factor in common disorders of the gastro-intestinal tract, yet the suggestion is so apparent that physicians on the Indian reservation should bear in mind the possibility of the presence of Endamoeba histolytica in making a diagnosis of all obscure intestinal complaints.

SUMMARY

1. Stool samples from eighty-three Indian boys of the Arapahoe tribe in Wyoming have been examined for intestinal protozoa.

2. Of these patients, seventy-eight, or 93.9 per cent, were positive for one or more species of intestinal protozoa.

3. These seventy-eight positive cases presented a total of 144 separate infestations, or an average of 2.2 species per positive case.

4. Endamoeba histolytica was present in 26.5 per cent of the total number of cases examined.

5. These data raise the question of whether Endamoeba histolytica is not widespread among the North American Indians and a contributing factor in many gastro-intestinal disorders in these people.

DIPHTHERIA TOXOID

COMPARATIVE IMMUNIZING VALUE WITH AND WITHOUT ALUM, AS INDICATED BY THE SCHICK TEST

JOHN L. WHITE, M.D.
AND
EMIL A. SCHLAGETER, M.D.
CHICAGO

The work here reported was done with diphtheria toxoid furnished by Dr. William H. Park, director of laboratories and research, of the department of health of New York. Its purposes were:

To test the relative immunizing value of a given diphtheria toxoid, with and without the addition of alum.

To find the optimum dosage as to the amount and number of doses of both products.

To establish the most desirable interval between doses for group immunization.

To review the results previously obtained with commercial toxin-antitoxin in Chicago.

Identical lots of diphtheria toxoid of high antigenic value were employed, to one of which 0.2 per cent of alum had been added. The dosages were: a single dose of 1 cc. of both alum and nonalum toxoid, two doses of 1 cc. each of both products at intervals of one week, and of three weeks, and three doses of 0.5 cc., each of both reagents at intervals of one week.

The results of the tests indicate that the Park alum toxoid was somewhat more effective in producing immunity than the same lots of toxoid containing no alum. This was most noticeable in the series utilizing two doses of 1 cc. each at an interval of one week.

In this series, 96.1 per cent of 295 children were immunized by the Park alum toxoid in two months, and 100 per cent of 254 children in six months, as compared with 94.6 per cent of 263 children in two months and 95.9 per cent of 213 children in six months, the same lot of Park toxoid without the alum being used.

The results likewise indicate that there is no decided advantage in using an interval of three weeks between doses as compared with an interval of one week. The percentages in the series in which two 1 cc. doses were used did not show any significant difference for either time interval in producing negative Schick reactions. Yet, for administrative purposes in the handling of groups, the shorter interval between the doses is obviously more desirable.

Three doses of 0.5 cc. each of Park alum toxoid at weekly intervals were less effective than two doses of 1 cc. each of a similar reagent at an interval of one week. The former series gave 94.2 per cent of immunes at two months and 96.8 per cent at six months, as compared with 96.1 per cent in two months and 100 per cent in six months in the latter series.

TABLE 1.—*Experiments on Park Alum Toxoid Immunizations*

	Schick Test Percentage			
	Negative	Positive	Immune	Non-immune
Group 1.—Given two doses, 1 cc. each, of Park alum toxoid at an interval of three weeks				
Two months after last injection	356	13	96.5	3.5
Six months after last injection	362	7	98.1	1.9
Group 2.—Given two doses, 1 cc. each of Park toxoid without alum, at an interval of three weeks				
Two months after last injection	217	16	93.1	6.9
Six months after last injection	167	6	96.5	3.5
Group 3.—Given two doses, 1 cc. each, of Park alum toxoid at an interval of one week				
Two months after last injection	295	12	96.1	3.9
Six months after last injection	254	0	100.0	0.0
Group 4.—Given two doses, 1 cc. each, of Park toxoid without alum, at an interval of one week				
Two months after last injection	263	15	94.6	5.4
Six months after last injection	213	9	95.95	4.05
Group 5.—Given three doses, 0.5 cc. each, of Park alum toxoid at intervals of one week				
Two months after last injection	194	12	94.2	5.8
Six months after last injection	149	5	96.8	3.2
Group 6.—Given three doses, 0.5 cc. each, of Park toxoid without alum, at intervals of one week				
Two months after last injection	182	53	77.4	22.6
Six months after last injection	37	10	78.7	21.3
Group 7.—Given one dose, 1 cc., of Park alum toxoid				
Two months after injection	133	129	50.8	49.2
Six months after injection	183	67	73.2	26.8
Group 8.—Given one dose, 1 cc., Park toxoid without alum				
Two months after injection	116	120	49.2	50.8
Six months after injection	137	30	82.0	18.0

TABLE 2.—*Toxin-Antitoxin Series*

Given three doses of 1 cc. each of commercial diphtheria toxin-antitoxin at intervals of one week	Schick Test Percentage			
	Negative	Positive	Immune	Non-immune
Over one year after last injection	218	85	72.0	28.0

The series in which one dose only of both reagents was used was decidedly less effective in producing the desired immunity. A single dose of the Park alum toxoid produced immunity in but 50.8 per cent in two months and 73.2 per cent in six months. The figures for the Park toxoid without alum for one dose only were 49.2 per cent in two months and 82 per cent in six months.

These lots of diphtheria toxoid, both with and without alum, when given in proper dosage, proved to be considerably more effective than three doses of the commercial toxin-antitoxin formerly used in Chicago, which, in a series inoculated a year or more prior to the Schick tests, showed but 72 per cent of immunes. These treatments had been given at intervals of one week.

From the Section of Technical Service and Research, Board of Health of Chicago.

DYSENTERY

REPORT OF THREE CASES IN ONE FAMILY DUE TO ATYPICAL BACILLUS DYSENTERIAE AND ENDAMOEBA HISTOLYTICA

HERBERT L. WEINBERGER, M.D.
Assistant Professor of Gastro-Enterology, Tulane University Post-Graduate School of Medicine
NEW ORLEANS

Much attention has been drawn to the outbreak of acute colitis in persons who visited Chicago from June until November 1933. Interest has been intense, owing to the severity of the colitis and the fact that the mortality rate has been so great.

Investigators who have reported thus far point to the presence of Endamoeba histolytica as the causative agent of this particular acute colitis.

An interesting point in these fulminating cases of dysentery has been the failure to find Endamoeba histolytica in the early stages of the disease. Lund and Ingham[1] reported four fatal cases of amebiasis in which the ameba, although carefully searched for, was not discovered until autopsy. In my two cases, Endamoeba histolytica did not make itself evident until two and one-half months after the onset of the illness. This brings out the possibility of a double infection existing, with the ameba making its appearance late. The suggestion may be that this was due to the relatively long incubation period of Endamoeba histolytica.

The cases to be reported were all associated with high fever, leukocytosis, prostration, and signs and symptoms of an acute condition of the abdomen. This is unusual in cases of amebiasis per se and, as expressed by Craig,[2] is probably due to an associated infection, usually the bacillary dysentery group. This proved to be true in my cases, in which Bacillus dysenteriae, described by Schorer and Duval[3] in 1904, was isolated sixty days before the discovery of Endamoeba histolytica.

REPORT OF CASES

The mother, father, daughter and the mother's sister, all apparently well, attended the world's fair in Chicago during the early part of August 1933. During their stay there, all visited the same hotel. The sister developed an acute abdominal condition characterized by diarrhea, abdominal pain and distention, and after a few days' illness died; the cause was not determined.

CASE 1.—The daughter, aged 24 years, began to complain of abdominal pain, August 30, accompanied by a fever of 100 F., nausea and vomiting. She consulted a competent surgeon that morning, who on examination found marked abdominal rigidity with the maximum tenderness over McBurney's point. The blood count revealed 15,000 leukocytes, with 83 per cent neutrophils. That afternoon the abdominal pain became worse, with the temperature going up to 102. A second blood count revealed 17,000 leukocytes, with 89 per cent neutrophils. An appendectomy was done and whereas the appendix was edematous and injected, the surgeon was struck by the markedly inflammatory reaction in the cecum and ascending colon. He described the cecum as being dark red. The appendix was removed. The next day the patient developed a severe diarrhea. Repeated stool examinations revealed no parasites. Widal and agglutination against stock dysentery cultures were negative. September 10 she was discharged but continued to have spells of cramps and diarrhea.

Sigmoidoscopic examination revealed no injection or ulcerations in the rectum or sigmoid. In stool culture, Bacillus dysenteriae[3] was found. This organism was agglutinated in dilutions of 1:600 against her own blood serum. Vaccine was made from this abdominal organism and administered, with complete disappearance of pain. After three weeks' time the abdominal pains returned; on another examination of stool, Endamoeba histolytica was found. She was given chiniofon and made an uneventful recovery.

CASE 2.—The father, aged 45, first noticed griping pains in the abdomen, August 22, while on the train returning from Chicago. These pains continued during the first week in September, at which time fever and diarrhea developed. September 13, this condition forced the patient to go to bed, where he remained for about two weeks. During this time he suffered severe abdominal pains and nausea. His temperature ranged from 99 to 101. Repeated stool examinations by a competent pathologist revealed no parasites or cysts. Agglutinations against stock dysentery culture groups were negative.

After a few days of castor oil purgation, the abdominal pains were relieved and the patient returned to work but continued to have occasional griping pains.

November 11, pain in the right lower quadrant became so severe that he was forced to go to bed again. The temperature was 102, with mucus but no diarrhea. November 15 the lower right quadrant was rigid. Sigmoidoscopic examination was done but no ulcerations were found in the rectum or sigmoid. The patient was taken to Touro Infirmary, where a blood count revealed 9,750 leukocytes and 69 per cent neutrophils.

Repeated stool examinations and proctoscopic smears were negative for parasites but contained pus. A culture made from the bowel smear yielded Bacillus dysenteriae.[3] This organism agglutinated against the patient's blood in dilutions of 1:600.

The patient continued to complain of pain in the lower right quadrant, and fever ranged from 99 to 103. Vaccine was started and in two weeks the abdomen became less rigid and the temperature reached normal at times during the day.

December 14, the patient again began to have griping pains in the lower part of the abdomen with daily rises of temperature to 103. A diarrhea developed and, on stool examination, Endamoeba histolytica was found.

Under treatment with vaccine of the isolated Bacillus dysenteriae, chiniofon and emetine, the patient made an uneventful recovery.

CASE 3.—The mother, aged 45, began to suffer with indigestion and gas pains during the latter part of August. The abdomen became markedly distended and sore. No diarrhea was noted. She continued to suffer but remained on her feet until October, when she went to bed, having a temperature of 100. She remained in bed one week, felt better and again was ambulatory with only slight abdominal pains but no fever, no diarrhea, and only occasional slight mucus in stools. Repeated stool examinations by a competent pathologist revealed no parasites or cysts.

November 15, pain in the right side was very severe. Abdominal rigidity and distention, with the maximum point of tenderness over McBurney's point, was associated with a temperature of 100, nausea and vomiting.

The patient was taken to Touro Infirmary, where a blood count revealed 15,000 leukocytes, with 75 per cent neutrophils. Agglutinations against stock dysentery cultures were negative. Sigmoidoscopic examinations revealed no injection or ulcerations of the rectum or sigmoid. Smears from the bowel revealed no parasites but the presence of pus. In stool culture was found Bacillus dysenteriae.[3] This organism agglutinated against the patient's blood serum in dilutions of 1:600. Vaccine was made from the isolated Bacillus dysenteriae.

After a few days of colonic irrigations of mild silver protein 1:1,000 the patient's temperature became normal. Vaccine was given, with subsequent reactions but some abdominal relief.

December 16, the patient had abdominal cramps, tenesmus, and diarrhea with blood and mucus. Sigmoidoscopic examination revealed punctate ulcers in the rectum and sigmoid. Amebas in the vegetative stage were revealed in mucus from the bowel. Under treatment with vaccine, chiniofon and emetine, the patient made an uneventful recovery.

1. Lund, C. C., and Ingham, T. R.: Four Fatal Cases of Unsuspected Amebiasis, J. A. M. A. **101**: 1720 (Nov. 25) 1933.
2. Craig, C. F.: Chemical Aspects of Amebiasis, read before the Orleans Parish Medical Society, Nov. 27, 1933.
3. Schorer and Duval, in Studies from Rockefeller Institute for Medical Research **2**: 48, 132, 1904.

DIAGNOSIS

In the presence of an epidemic of any condition associated with diarrhea, a physician must be alert for the possibility of the presence not only of amebiasis but also of the bacillary forms of dysentery. Silverman [4] has called attention to the relative prevalence of bacillary dysentery, especially in cases of acute dysentery in which the amebas are not found.

The identification of the associated bacillary dysentery group in these cases was made by Dr. Charles Duval from stool cultures. The following is his description of the organism:

The bacteriologic examination of the stools of these patients suffering with acute dysentery reveals a specific bacillus, identical in each instance, which reacts and cross reacts positively with the blood of the various cases. It is noteworthy that the inoculated petri dishes prepared from the freshly passed mucoid stools showed after twenty-four hours' incubation at 37 C. large numbers of this organism, which were approximately two to one as compared to B. coli colonies on the plates.

The bacillus isolated from these cases is undoubtedly a member of the B. dysenteriae group. However, it is not the true Shiga or any one of the familiar mannitol fermenting strains. Cultural and serologic studies of the bacillus show a complete correspondence with the organism that was first described by Duval and Schorer in 1904, which they recovered from the dejecta of certain cases of infantile diarrhea. Though differing in certain cultural aspects, the bacillus was considered by the authors as a variant or race of B. dysenteriae because it reacted strongly with antidysenteric serums.

The outstanding cultural difference of this bacillus from the well known members of the dysentery group is noted in litmus milk and Hiss's semisolid medium. Milk is rendered decidedly alkaline and it remains so. In the semisolid jelly of Hiss, the growth, particularly for the deeper portions, spreads away from the inoculated needle path in such a striking manner as to give to the growth the appearance of an "opened umbrella" with the convexity toward the surface of the medium.

The bacillus possesses morphologic and staining properties which are identical with the Shiga bacillus of dysentery. In culture on the various sugars excepting dextrose there is no fermentation, even with acid production. In dextrose, acid is produced but no gas.

In regard to the establishment of causal relation of this bacillus to the dysentery in question it is based chiefly on the high agglutinating power of the patients' blood. The homologous isolations reacted positively in a dilution of 1:600. The patients' bloods were also tested against stock cultures of Shiga and Flexner types of B. dysenteriae. "Shiga" gave negative reactions, while "Flexner" reacted positively in dilutions of 1:200. This positive reaction of the patients' bloods to the Flexner bacillus is further proof that the cases are those of acute bacillary dysentery caused by the Duval-Schorer type of B. dysenteriae.

Surgeons who work in tropical countries have found that they must always be on their guard to avoid operation in cases of amebiasis under the diagnosis of acute appendicitis.[5] It is important to examine stools and proctoscopic smears repeatedly for the possible presence of Endamoeba histolytica in vegetative or encysted forms. Also in certain cases in which every possible means have been tried to locate the ameba but of no avail, one would be justified in administering treatment for this parasite.

TREATMENT

The treatment in these cases consisted of rest in bed, a nonresidue diet and bland colonic irrigations. Vaccine made from the isolated Schorer and Duval Bacillus dysenteriae was given in doses of 0.1 cc. daily, increasing 0.1 cc. daily until 1 cc. is reached, and then 1 cc. every four or five days for from six to eight weeks.

For the amebiasis, 1 grain (0.065 Gm.) of emetine was given for ten days along with 24 grains (1.5 Gm.) of chiniofon for ten days.

CONCLUSIONS

1. The possible cause for the failure to find Endamoeba histolytica early in the recently reported fatal cases of acute dysentery in the late epidemic was the relatively long incubation period of this parasite.

2. Bacillus dysenteriae, described by Schorer and Duval in 1904, was isolated in my cases sixty days before the discovery of Endamoeba histolytica.

3. Vaccine made from the isolated Bacillus dysenteriae proved effective in the treatment of these cases, resulting in complete abatement of signs and symptoms until relapse, at which time Endamoeba histolytica was found.

4. Endamoeba histolytica was discovered sixty days after the acute onset.

5. The combination of emetine and chiniofon proved effective against the amebiasis.

6. In every case of acute colitis, the possibility must not be overlooked of the presence of double infection, especially the association of Endamoeba histolytica with one of the Bacillus dysenteriae group.

307 Physicians and Surgeons Building.

4. Silverman, D. N., and Feemster, Roy: Types of Bacterial Dysentery in the South: A Clinical and Bacteriological Study.

5. Reid, M. E.: Personal Communication to Lund and Ingham. Connor, F. P.: Surgery in the Tropics, Philadelphia, P. Blakiston's Son & Co., 1929.

LYMPHOGRANULOMATOSIS MALIGNA (HODGKIN'S DISEASE)

WITH INVASION OF THE SPINAL CANAL AND PARAPLEGIA

MELBOURNE J. COOPER, M.D.
Associate in Neurology, University of Pennsylvania School of Medicine
PHILADELPHIA

Serious involvement of the central nervous system in the course of lymphogranulomatosis maligna is a relatively well known condition, although cases proved by autopsy are of somewhat infrequent occurrence. Of the neurologic complications encountered in this disease, the most familiar ones are (*a*) damage to the spinal cord, presumably as a result of direct pressure caused either by extradural deposits of the abnormal granulomatous tissue or by disease of one or more vertebral bodies with consequent angulation, and (*b*) degeneration resulting from interference with the blood supply of the cord. Weil [1] in his recent review of the literature found that local lesions accounted for one of the aforenamed processes in 85 per cent of the cases with spinal cord involvement analyzed in his study. In an additional 7 per cent of the cases, according to his interpretation, there was scar tissue in the spinal canal, indicating to him that previously there had existed local granulomatous tissue capable of producing the cord symptoms.

Inflammatory and degenerative changes in the cord substance, without any conspicuous accumulations of granulomatous tissue in the immediate neighborhood,

From the D. J. McCarthy Foundation of the University of Pennsylvania. Based on material from the wards and laboratories of the Philadelphia General Hospital.

1. Weil, Arthur: Spinal Cord Changes in Lymphogranulomatosis, Arch. Neurol. & Psychiat. **26**: 1009 (Nov.) 1931.

have been observed in some instances, as in Forrest's [2] case 1, Shapiro's [3] case 2, Weber's [4] case 13, and in Weil's [1] case 3. In the last mentioned there evidently was an infectious meningitis as well. Walthard [5] described a case with inflammatory changes, vascular thrombosis and extensive softening of the cord, the destructive process having been far greater than that which would have been expected as a result of pressure from the extradural tumor. There have been recorded widely diverse opinions as to the mechanism by which the various changes in the cord are produced in the absence of any apparent compression. For discussions of such possible mechanisms the reader is referred to the communications of Weil,[1] Shapiro,[3] and Weil and Davison.[6]

The case here reported belongs to the larger group embracing the occurrence of lymphogranulomatous tissue locally, directly involving either the vertebrae, the structures within the spinal canal or those within the intervertebral foramina. It is unusual in that this single case shows both epidural and subdural lymphogranulomatous tissue, invasion of the nerve roots by outgrowths from this tissue, a direct connection by way of the nerve roots between the epidural and subdural tumor masses, invasion of blood vessels in the tumor mass by lymphogranulomatous tissue, congestion of the vessels of the cord and degeneration within the cord substance.

REPORT OF CASE

M. B., a woman, aged 39, admitted to the radiologic service of Dr. J. B. Carnett at the Philadelphia General Hospital, Sept. 1, 1931, complained of paralysis of both lower limbs. About three years previously she had first noticed generalized muscular weakness and had lost some weight, and the axillary lymphatic nodes had enlarged. After six months the cervical nodes had become prominent and the patient had begun to experience some shortness of breath on exertion.

The patient had been studied at the hospital of the University of Pennsylvania from May 1929 until July 1931. In that period a biopsy of a lymph node proved the diagnosis of Hodgkin's disease, and the patient was given, in the radiation therapy department, approximately 3 erythema doses of roentgen rays over the chest, anteriorly and posteriorly; from 3 to 4 erythema doses over each axilla anteriorly and posteriorly; from 3 to 4 erythema doses over each inguinal region; from 3 to 4 doses over each side of the neck, and from 1 to 2 doses over the abdomen. She improved greatly during the earlier course of this treatment. In the dermatologic department the blood Wassermann reaction was found to be strongly positive, and the patient was given five intramuscular injections of quinine bismuth iodine, 2 cc., and a total of sixteen injections of bismuth arsphenamine sulphonate, 0.2 Gm., in somewhat interrupted courses, owing to the irregularity of the patient's attendance. The blood Wassermann reaction became negative on one occasion and was slightly positive subsequently.

Repeated attacks of chest pains, vomiting and abdominal discomfort occurred after that, however, and there was gradual progressive abdominal distention. About three weeks prior to the admission of the patient to the Philadelphia General Hospital stiffness and weakness of the lower limbs occurred, and four or five days before admission there developed a complete paralysis of the lower limbs, and incontinence of urine and feces.

The past medical history and the family history were irrelevant.

On physical examination the patient was found to be emaciated, and the anterior and posterior cervical and the supraclavicular lymphatic nodes on the left side were enlarged. The nodes on the right side were enlarged to a lesser degree, and there was moderate general lymphadenopathy. There was clinical and roentgenologic evidence of some consolidation in the upper lobe of the right lung, and some ascites was present.

The erythrocyte count was 2,900,000 cells per cubic millimeter, and the leukocyte count was 9,100, the differential count showing 88 per cent polymorphonuclear forms. The blood serology tests gave a plus 2 (weakly positive) Kahn, and negative Noguchi and icebox modification tests. The examination of the cerebrospinal fluid showed an increased globulin content, no cells, negative cholesterol and Noguchi tests, and a colloidal gold curve of 2455543222.

On neurologic examination Dr. J. C. Yaskin found that there was complete paralysis of the muscles of both lower extremities, including the gluteal and iliopsoas muscles. The paralyzed muscles were flaccid; the patellar and achilles reflexes of each side were diminished, and there was little or no response to plantar stimulation. Vibratory sensation was lost throughout the lower extremities and the lower half of the trunk; the sensation of touch was practically lost below the eighth thoracic dermatome, and that of pain below the tenth thoracic dermatome. There were, however, patchy areas below these levels in which there was some recognition of touch and of pain sensations, especially on the posterior aspect of the left thigh. The sense of position was entirely lost throughout the lower extremities.

Dr. Yaskin's diagnosis was softening of the spinal cord due to venous stasis and thrombosis brought about by the pressure of an extramedullary lymphogranulomatous deposit, although intramedullary infiltration was considered a possibility. Syphilis could not be ruled out but was considered to be less probable as an etiologic factor in the production of the neurologic signs.

Roentgenograms showed some rarefaction of the fourth lumbar vertebra, probably due to Hodgkin's disease, but the remainder of the spinal column was normal.

The patient died, September 13. At autopsy there was found a widespread involvement of the lymphatic nodes, lungs, pancreas, spleen, kidneys, suprarenals and muscles of the back by abnormal deposits, which were proved by microscopic examination to be a sclerosing type of lymphogranulomatosis maligna.

The gross examination of the spinal cord by Dr. Helena Riggs disclosed a thick tumor-like mass intimately attached to the dura mater, embracing the entire circumference of the cord in the lower cervical and upper thoracic regions. The mass was 7 cm. in length in the direction of the long axis of the spinal cord, and its greatest thickness was 0.5 cm. At the point of greatest thickness of the tumor, the dura appeared invaded, the subarachnoid space could not be identified grossly, and the cord itself appeared compressed, distorted and possibly degenerated. Above and below the level of the tumor the gross appearance of the cord and its membranes was normal.

Through the kindness and cooperation of Dr. N. W. Winkelman, Dr. Riggs, and the other staff members of the laboratories of the Philadelphia General Hospital, I obtained serial sections of the spinal cord with the meninges and the tumor mass at two levels, supplemented by many sections from the adjacent regions of the cord. Because of the distorted relationships of the cord and the nerve roots as a result of the presence of the tumor, the exact segmental localization of these sections was uncertain; but the most pronounced involvement, which is described and illustrated, evidently affected the upper thoracic cord segments.

Microscopic examination showed that the granulomatous mass at its point of greatest development completely encircled the cord outside the dura mater and was intimately adherent to the membrane. The dura was thickened and its substance was invaded in places by the granulomatous tissue, but no penetration could be found at any point. The van Gieson stains (fig. 1) showed the integrity of the dura at the several levels. The microscopic characteristics of the tumor tissue coincided with those of the lesions found elsewhere in the body and were typical of a sclerosing type of lymphogranulomatosis maligna.

2. Forrest, Devereux: A Case of Transient Paraplegia in Hodgkin's Disease, Lancet **2**: 809 (Oct. 15) 1927.

3. Shapiro, P. F.: Changes of the Spinal Cord in Hodgkin's Disease: Report of Two Cases with an Unusual Skin Manifestation in One, Arch. Neurol. & Psychiat. **24**: 509 (Sept.) 1930.

4. Weber, F. P.: Paraplegia in Lymphogranulomatosis Maligna and Leukemia, Internat. Clin. **1**: 126 (March) 1926.

5. Walthard, K. M.: Rückenmarkserweichung bei Lymphogranulom in extraduralen spinalen Raum; Lymphogranulom des Uterus als Nebenbefund, Ztschr. f. d. ges. Neurol. u. Psychiat. **97**: 1, 1924.

6. Weil, Arthur, and Davison, Charles: Changes in the Spinal Cord in Anemia, Arch. Neurol. & Psychiat. **22**: 966 (Nov.) 1929.

There was a background of fibrous tissue, varying in density in different areas, and in the trabeculae were cellular masses composed of fibroblasts, endothelial elements, Dorothy Reed giant cells, and lymphocytes and plasma cells. In some areas a limited amount of necrosis was seen, with occasionally a dense lymphocytic infiltration, largely though not strictly perivascular in distribution. The small and medium sized arteries showed a considerable thickening of the media and intima, with some hyalinization and some swelling and necrosis of the intima in many places. Masses of lymphogranulomatous cells were seen within the lumens of many vessels in the extradural tumor, apparently occluding these vessels.

The inner surface of the dura at one level was covered by an intimately adherent thin sheet of lymphogranulomatous tissue, extending almost completely around the cord, as extensions of the prominent nodules in the angles formed by the reflection of the dura over the entering and emerging nerve roots. The arachnoid in general seemed to be uninvolved except at its reflection over the nerve roots at the duraneural angles. In many places the intact arachnoid, entirely separated from the considerable subdural masses, could be clearly identified. At no point was the substance of the cord seen to be invaded by the abnormal tissue growth, and the nerve roots themselves, although seriously invaded at the duraneural angles and distally, showed no such infiltration proximal to the angle of dural reflection.

Of particular interest was the demonstration of continuity by way of the nerve roots between the extradural tumor and the intradural nodules. Cross sections of the cord through about the middle of the tumor mass, near the emerging nerve roots, showed the beginning lateral extension of the dura onto the nerve roots. Successive sections at this level showed the point of emergence of the roots from the dural canal, marked by a distinct reduction in the thickness of the membrane and its continuation in attenuated form distally toward the posterior root ganglions (fig. 2). Immediately distal to this termination of the true dural sac one could see numerous strands and projections of lymphogranulomatous tissue penetrating into the fibrous septums of the nerve bundles, being directly connected and traceable, on the one hand, to the extradural tumor and, on the other hand, to the intradural deposits. In longitudinal and slightly oblique sections of the roots these strands seemed to traverse the entire length of the extradural part of the nerve included in the block of tissue; i. e., from a

Fig. 1.—Cross section of the upper thoracic portion of the spinal cord: *a*, the encircling tumor mass; *b*, the intact dura; *c*, the nerve roots traversing the tumor; *d*, the beginning reflection of the dura over the nerve root of the opposite side. Van Gieson stain.

point near the posterior root ganglion in each instance proximally to the duraneural angle.

At a somewhat higher level the roots were similarly invaded in their distal parts and near the dural reflection, and there were masses of lymphogranulomatous tissue subdurally at the duraneural angles; but the available block of tissue was too small to permit tracing these roots through their entire course at that level. At the periphery of the extradural tumor at both levels, small but fairly regular and rounded isolated funiculi of nerve fibers, completely enveloped in the lymphogranulomatous mass, could be seen, evidently indicating the disorganization of the mixed peripheral nerves into separate bundles by the invading abnormal cells.

The abnormal tissue did not seem to have any tendency to invade the nerve fibers themselves or the funiculi, either in the mixed nerves, in the posterior root ganglions, or in the nerve roots within the dural sac. The vulnerable structures

Fig. 2.—Section through the duraneural angle: *a*, the beginning reflection of the dura onto the nerve root; *b*, the strands of lymphogranulomatous tissue accompanying the nerve roots into the subdural space; *c*, the merging of these strands distally with the extradural tumor. Toluidine blue stain.

appeared to be the fibrous epineurium, the perineurium and the endoneurium, or the lymph spaces delimited by these structures, and the subdural and epidural spaces. The striking departure of the projections of lymphogranulomatous tissue from the nerve bundles immediately within the dural sac and the sheetlike spreading of the tissue around the inner surface of the dura, without distinct involvement of the arachnoid, the cord, or the intradural portions of the nerve roots proximal to the duraneural angles, suggested the affinity of the pathologic tissue for the actual or potential lymph spaces offering the least amount of mechanical resistance or other defensive reaction against invasion.

The cord substance was the seat of myelopathic changes consisting of well marked vacuolation of the white matter, with extensive swelling and disintegration of the axons, and less conspicuous degeneration of the gray matter. Somewhat more than half of the ganglion cells of the anterior and posterior horns appeared to be normal, though among the remaining cells were seen various stages of degeneration, both of the character of ischemic degeneration and of acute swelling. The glial reaction was negligible, and small perivascular collections of phagocytic cells were found only rarely. The vessels within the cord substance as well as those of the extramedullary plexus were greatly congested. The vessels accompanying the intradural portions of the nerve roots were distinctly dilated and congested, the whole picture strongly suggesting that interruption of the blood supply of the cord, as a result of compression of the spinal branches of the vertebral, ascending and deep cervical and intercostal arteries, had played an important part in the production of the acute paraplegic symptoms. The vessels of the cord did not show evidences of syphilitic disease.

COMMENT

A number of observers have considered it probable that lymphogranulomatous tissue may reach the ver-

tebral canal by growing from the diseased mediastinal and retroperitoneal lymphatic structures through the intervertebral foramina, in company with the nerve roots. Such an observation was made by Weber [4] (case 14) and it has been demonstrated more or less

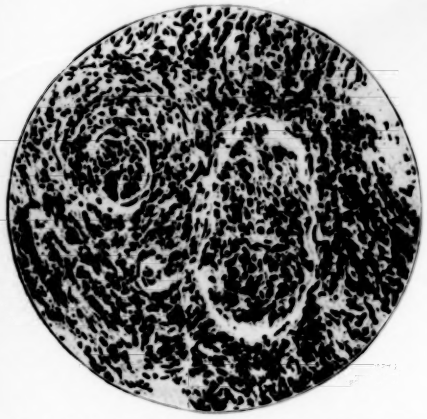

Fig. 3.—Section from the extradural tumor, showing the cell structure and the occurrence of masses of lymphogranulomatous cells within the lumens of the vessels. Toluidine blue stain.

convincingly in several instances in which there have been found, in the same case, invasion of the nerve roots in the intervertebral foramina and epidural deposits within the spinal canal. The cases of East and Lightwood,[7] Delius [8] and others [9] are examples of such observations.

Extension of lymphogranulomatous tissue (excluding cases of Hodgkin's sarcoma) to the subdural space was found by Urechia and Goia,[10] Johnston [11] and Düring,[12] and at autopsy Delius [8] found subdural growths at the site of a previous operation. Walthard [5] implied that the inflammatory and necrotic tissue about the nerve roots, in the subarachnoid space and in the substance of the cord in his case, resembled cellular masses of lymphogranulomatous origin, but he apparently attributed the extensive degenerative changes in the cord to a disturbance of circulation resulting from "granulomatous inflammation" with the vascular occlusions in the cord. The case of Serebrjanik [13] showed extensive metastasis to the brain substance, the cranial nerves, the spinal nerve roots, the root ganglions and the pia-arachnoid of both the brain and the cord. That author believes, however, that only in exceptional cases is the barrier of the dura to invasion of the central nervous system broken down, and he holds that the cord changes seen in the majority of instances are non-specific and result from direct compression or disturbance of the circulation.

The microscopic studies in the case reported herein support the conception that the granulomatous tissue has a tendency to spread by way of the nerve roots and that the spinal dura mater, even in a somewhat advanced stage of the disease, effectively resists direct penetration. The apparent affinity for the subdural space, representing a part of the lymphatic system, in preference to the nervous elements within the dural sac, suggests that the nervous tissue per se is damaged only in an incidental way, secondary to the involvement of the lymphatic channels or blood vessels supplying the nervous tissue. Evaluation of the other observations in this case, notably the apparent occlusions of small vessels in the substance of the extradural tumor by masses of cells resembling lymphogranulomatous elements and congestion of the vessels of the cord, is important. In the absence of demonstrable emboli in the vessels elsewhere than in the tumor, one probably is not justified in assuming that in this case the abnormal cells were disseminated through the blood channels, although the vascular occlusions in the epidural structures and vascular congestion in the cord, combined with the evidence of recent degenerative changes in the cord substance at the level of the tumor, indicate the importance of obstruction to the blood circulatory system in connection with the rapidly developing paraplegic symptoms. This is in support of the generally accepted view that circulatory disturbances play an important rôle in these cases in which the nerve roots are invaded and compressed.

SUMMARY AND CONCLUSIONS

In a case of lymphogranulomatosis maligna the clinical and neuropathologic features have been reported,

Fig. 4.—Section of the spinal cord: *a*, vacuolation of the white matter; *b*, congestion of the vessels. The ganglion cells seen in this section are in the lateral splanchnic cell column. Hematoxylin-eosin stain. Slightly reduced from a photomicrograph with a magnification of 92 diameters.

with an attempt to correlate, as far as possible, the clinical picture in this and previously reported similar cases with the gross and microscopic pathologic changes. In this case there was a direct extension of lymphogranulomatous tissue from an extradural tumor through

7. East, C. F. T., and Lightwood, R. C.: Compression Paraplegia in Lymphadenoma, Lancet **2**: 807 (Oct. 15) 1927.

8. Delius, L.: Rückenmarkskompression durch Lymphogranulomatose, Deutsche Ztschr. f. Nervenh. **125**: 142 (May 1) 1932.

9. Schaeffer, Henri, and Horowitz, Adolphe: Les accidents nerveux dans la maladie de Sternberg, Presse méd. **38**: 403 (March 22) 1930. Weil.[1]

10. Urechia, C. I., and Goia, I.: Lymphogranulomatose de la moelle, Presse méd. **35**: 179 (Feb. 9) 1927.

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12. Düring, M.: Zur Pathologie und Klinik des Lymphogranuloms, Deutsches Arch. f. klin. Med. **127**: 76, 1918.

13. Serebrjanik, B.: Lymphogranulomatöse Meningoencephalitis und Polyradiculitis, Deutsche Ztschr. f. Nervenh. **129**: 193, 1933.

the nerve roots, particularly through their fibrous septums, to the subdural space. There is apparently a greater affinity of this type of abnormal tissue for the structures comprising the lymphatic system, in preference to the structures of the nervous system. The vascular congestion was presumably secondary to compression or occlusion of the vessels in their courses along the nerve roots, and the pronounced degenerative changes in the cord substance have been attributed to this factor.

On the basis of the changes found in this case and those in similar cases reported by other observers, it is concluded that:

1. The nerve roots afford a route by which lymphogranulomatous tissue may reach the subdural space, probably through the lymphatic spaces of the roots rather than by the substance of the nerve fibers.

2. The spinal dura mater is relatively more resistant to penetration than are the septums of the nerve roots.

3. Paraplegic symptoms may result not only from direct cord compression but from obstruction to the circulation of the cord as a result of compression or invasion of the vessels accompanying the nerve roots.

1930 Chestnut Street.

THE VALUE OF THE PROTEIN SKIN TESTS IN INFANTILE ECZEMA

LEWIS WEBB HILL, M.D.
BOSTON

It is well known that infants and young children with eczema very frequently give positive skin tests to various proteins and that normal infants do not. What significance have these tests both in a theoretical discussion of the etiology of the disease and in the practical management of it?

METHODS OF TESTING

Three methods of testing have been employed: (1) the cutaneous, (2) the intracutaneous, and (3) the method of passive transfer, or Prausnitz-Küstner phenomenon.

Each has its advantages and disadvantages. The cutaneous test has the advantage of simplicity, and it is not so likely to give false positives as the intracutaneous method. It has been adopted by most allergists for general clinical work. The intracutaneous method is more delicate, but it has the disadvantage of sometimes giving false positives, of occasionally causing general reactions in unusually sensitive subjects and, when a large number of tests with different proteins are to be made, is not practical for general use. It is often of value in special investigative work, however. In the method of passive transfer (Prausnitz-Küstner), a small amount of blood serum from the individual to be tested is injected into the skin of a normal person, and after twenty-four hours the allergen is applied, either intracutaneously or cutaneously, at the site of the previous inoculation. If the test is positive, an urticarial wheal develops in a few moments. This method is accurate and has been of great value in special investigative work, but it is not well adapted for routine use. It may be positive when the ordinary skin test is negative, or it may be negative when the skin test is positive, but in general the two are parallel. In allergic infants the allergy may be general, in which case both passive transfer and skin tests are positive, or the sensitization may be confined to the skin alone, when the skin test is positive and the passive transfer negative.

For practical purposes the cutaneous test is the most satisfactory to employ in dealing with eczematous infants.

TECHNIC OF TESTING

For infants and young children the back is the best site. The method of scarification is of some importance. It is desired to make a scratch into the skin

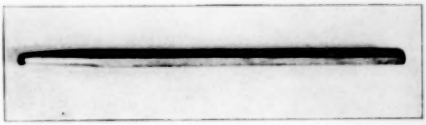

Fig. 1.—Scarifier.

without drawing blood and to make each scratch of the same size and depth. Needles or small knives have been usually employed. They are well adapted for use in adults, but it is almost impossible with a struggling infant to make a series of scratches of the same size and depth with a needle or a knife. I have used for some time a circular scarifier $^{90}/_{1,000}$ inch in diameter,[1] made in the form of a punch with sharpened edges, and have found it very satisfactory (fig. 1). Being in the form of a circle, the scratches are always of the same length, and with a little practice it is not difficult to make a series of scratches much more rapidly with this tool than with a needle or a knife, and it is less painful. After the scratches have been made, a small amount of protein powder is applied, and a drop of physiologic solution of sodium chloride is mixed with it. In infants, saline solution is to be preferred to tenth normal solution of sodium hydroxide, on account of the delicacy of the skin.

READING OF THE TESTS

The response to the test varies a great deal in different individuals, according to the particular characteristics of the skin. In some infants there is a certain amount of erythema surrounding every scratch; in others, practically none. Some infants give markedly positive tests with large wheal formation and a surrounding area of erythema (fig. 2); others merely show larger or smaller areas of erythema without wheals. The latter type of reaction is more common in infants, and no wheals may be obtained even in markedly sensitive infants (fig. 3). In order to interpret the tests

Positive Reactions in Three Hundred Cases of Eczema

Egg	131	Oat	9	Orris powder	5	Codfish	2
Milk	45	Beef	8	Haddock	4	Lamb	2
Wheat	35	Corn	8	Carrot	4	Dog hair	2
Barley	17	Potato	8	Pea	4	Walnut	1
Cat hair	12	Tomato	7	Orange	4	Wool	1
Spinach	11	Silk	6	Chicken	3	Salmon	1

Of 80 infants 6 months of age or under	61% were positive
Of 100 infants 1 year of age or under	63% were positive
Of 52 children 2 years of age or over, in whom the eczema had existed since early infancy	77% were positive

From the Eczema Clinic, Children's Hospital, and the Department of Pediatrics, Harvard Medical School.

1. Made by Broadbent & Co., Huntington Avenue, Boston.

some practice is necessary, and on account of the varying susceptibility of individual skins there can be no absolute standard by which to judge a positive test. It is in relation to the control and to the other tests that any individual test should be judged, and if a test gives a much larger reaction than the control or the other tests, this is called a positive test.

NATURE OF SKIN TESTS

In a positive skin test with erythema, the essential phenomenon is a dilatation of the small cutaneous vessels. If this dilatation goes on far enough, serum exudes through their walls, and wheal formation results. This process has been brought about by the action of the applied allergen either on the sensitized skin cells, which then release a substance capable of causing vessel dilatation, or less likely by direct action on the vessel wall or on the sympathetic nerve endings controlling vessel contraction and dilatation. This phenomenon occurs to a certain extent in normal individuals when the skin is scratched, and Thomas Lewis believes that the mechanical trauma of the scratch releases a histamine-like substance from the skin cells, which then acts on the vessels and causes dilatation. In allergic individuals this process is intensified, owing to the fact that the skin cells have been "sensitized," which is simply another way of saying that some specific change has taken place in them about which practically nothing is known. The process going on in a positive skin test is probably much the same as that which goes on in eczema, and it is likely that the more violent response in eczema is due to repeated and prolonged contact of the cells with the allergen, applied either from within or from without.

Fig. 2.—Multiple wheal formation. An unusual type of reaction in infancy.

INCIDENCE OF POSITIVE TESTS

In 300 eczematous infants and young children, skin tests were positive in 59 per cent, as shown in the accompanying table.

SIGNIFICANCE OF EGG

It is agreed by all allergists that in infancy and childhood egg is by far the most common allergen to which tests are obtained, and that egg white is the particular protein usually responsible. In our series we have most often obtained positive tests to both egg white and egg yolk. Sensitivity to egg is seen especially in infancy; it diminishes as the child grows older. One hundred infants 1 year old or younger gave fifty-four reactions to egg, and 85 per cent of those who were positive to anything were positive to egg. Fifty-two children 2 years old or older gave twenty-three positive reactions to egg (44 per cent), and 57 per cent of those who were positive to anything were positive to egg.

Since positive egg reactions with no other positive reactions are very often obtained in young infants who have never eaten egg, it is obvious that egg is not directly concerned as a cause of the eczema, and for this reason it was formerly thought by many that the tests were not specific, that these infants were not actually sensitized to egg, and that the positive tests were due to some peculiarity of egg protein, which was without much significance. Many pediatricians and dermatologists became discouraged with skin testing in eczematous infants and considered it of little value.

Recently, Moro,[2] and also Woringer,[3] have shown, however, that almost all infants who give positive skin tests to egg give also positive passive transfer tests, so that it may be said without a doubt that they are sensitized to egg. Since a great many of them are not eating egg, it cannot be said that ingestion of the allergen to which they are sensitive is directly causing the eczema. Eczema and positive egg reactions show themselves during the early months of life, and as in the majority of these infants nothing could have happened during postnatal life to render them sensitive, the sensitivity is either truly hereditary or of placental transmission. It is well known that of all proteins egg white is the most difficult to digest, and Walzer [4] has shown by use of the passive transfer reaction that unchanged egg white circulates in the blood stream in practically all individuals, even after the ingestion of very small amounts. Ratner [5] has shown that the placenta is permeable to foreign protein. It follows, therefore, that during pregnancy there may be egg white in the fetal circulation. But only a small proportion of infants are sensitized to egg. This may be due to differences in the amount of egg ingested during pregnancy, or more likely to individual peculiarities of the fetus; that is, heredity.

It is very common in young eczematous infants to obtain positive tests to egg alone and to no other allergens; in older infants and children multiple sensitization is the rule, with positive tests to egg and to various other foods and animal epidermals. Of forty-six infants under 6 months of age who gave positive tests to something, forty-two reacted to egg and twenty-four of these reacted to egg alone. Of forty-six infants between 6 and 12 months of age who gave positive tests to something, thirty-nine reacted to egg, but only twelve reacted to egg alone. In the first group there were 107 total reactions to various proteins; in the second group there were 151.

Moro has suggested that sensitivity to egg acquired in utero is often the starting point of allergy and that this egg sensitivity does something to the individual which not only renders him sensitive to egg but also makes him susceptible to other sensitivities as he comes into contact with other proteins. Furthermore, it does something to him which renders his skin subject to eczema in spite of the fact that as a young infant he does not come into contact with the allergen to which

2. Moro, Ernst: Ekzema infantum und Dermatitis seborrhoides, Berlin, Julius Springer, 1932.
3. Woringer, P.: Recherches sur l'allergie ovalbuminique du nourisson, Rev. franç. de pédiat. **8**: 649, 1932.
4. Walzer, Matthew: J. Immunology **11**: 249 (April) 1926.
5. Ratner, Bret, and Greenburgh, J. E.: J. Allergy **3**: 149 (Jan.) 1932.

he is sensitive (egg). So that eczema can and does exist in the infant without contact with the specific allergen. As Moro has said, the soil is prepared by sensitivity to the specific allergen, and then the eczema may be often brought about by various nonspecific causes. It is not unlikely that in these egg sensitive infants small amounts of any food protein which are absorbed unsplit into the circulation may bring about eczema, even if these proteins fail to give positive skin tests.

Although egg white is by far the most common protein to which infants are sensitive, allergic infants may be nonsensitive to egg and sensitive to other proteins. This sensitivity probably arises in the same way as egg sensitivity. Although this may occur, it is not common, and in eighteen infants who were definitely sensitive to cow's milk, seventeen were sensitive to egg as well, although none of them were eating or had ever eaten an egg.

THE SIGNIFICANCE OF MILK SENSITIZATION

Since cow's milk is the sole diet of most young infants when they develop eczema, it deserves consideration as an etiologic factor, either primary or secondary.

In 300 infants tested, 45 gave positive reactions to cow's milk. These reactions were almost all in young infants. In a few cases casein alone gave a reaction, in a few lactalbumin; as a rule both were positive. A few of these infants were breast fed and showed violent reactions when given cow's milk for the first time. Almost all of them, however, were bottle fed and had been taking cow's milk with no untoward symptoms other than eczema. It appears from the figures already given that milk allergy is usually secondary to or at any rate is accompanied by egg allergy. There is this peculiarity, however: In practically all the infants who are sensitive to milk and to egg, it is possible to cure them by withdrawing cow's milk and using a milk-free diet, whereas in those infants who are sensitive to egg alone, and who are not eating egg, it is not possible to withdraw anything they are eating, and they do not do so well. It is true that occasionally an infant who does not give positive skin tests to milk will be cured by removal of milk from the diet; but this is not the rule, and it must be concluded that if milk is causative of the eczema in these cases it is not causative by means of specific sensitization but rather by means of digestive and metabolic factors, such as overfeeding with or poor digestion of any one of the food elements.

THEORETICAL VALUE OF THE SKIN TESTS

While it is certainly not true that all eczematous infants are allergic, a great many of them are, probably about two thirds, and the skin tests are indispensable in differentiating and in helping one to understand this group. The positive skin tests to egg which are so common in young infants help one not a whit in the practical treatment of the infant; but they do help considerably in a proper understanding of the disease, and without allergic study of these infants no progress could be made.

The answer to infantile eczema probably lies in a better understanding of egg sensitization and the changes it causes in the immunologic reactions of the body, but there are woful gaps in existing knowledge.

PRACTICAL VALUE OF THE SKIN TESTS

The skin tests are of practical value in that they often give indications for treatment, for, no matter what local treatment is used, good results cannot be obtained in allergic eczema unless the allergic factor is also taken into account.

Although many methods of specific and nonspecific desensitization have been tried, they are not at all reliable or satisfactory for general use in eczema, and there is no method at present that can be depended on to render an allergic infant nonallergic. Avoidance of the offending food or foods in accordance with the evidence furnished by the skin tests is the method of choice. The effectiveness of this procedure varies a great deal, however. In young infants with milk sensitivity, avoidance of milk, and the substitution of a milk-free diet is likely to cure or at any rate greatly improve the eczema.

Likewise, if there is definite sensitivity to wheat, oats or any food that the child is taking in large amounts, and there are not many other sensitivities, avoidance of this food is very satisfactory. If there is sensitivity to many foods and epidermals, combined with egg sensitivity, however, it is not easy to avoid all of them, and as a matter of fact avoidance may not be productive of good results, for such children sometimes seem to be sensitive to almost any food. Avoidance of egg is, of course, indicated if the skin test to egg is positive but it is not common to produce a cure by so doing. Most infants who are sensitive to food outgrow this sensitivity and even become nonallergic; but in many cases the allergic state persists, and the baby who is sensitive to egg and milk at 6 months is sensitive to horse dander and ragweed or other epidermals at the age of 6 years and may have asthma or hay fever instead of eczema, or perhaps all combined.

Fig. 3.—Erythema with practically no wheal formation. The usual type of reaction in a multiply sensitized child.

There can be no truly satisfactory way of dealing with all these allergic manifestations until some effective method becomes available not of treating the symptoms caused by allergy but of attacking the allergic state itself.

CONCLUSIONS

1. Skin testing in infantile eczema should not be discredited.

2. It has been of great value in revealing what little is known of the nature of the disease.

3. It often, although not always, points the way to the cure of the patient.

319 Longwood Avenue.

Clinical Notes, Suggestions and New Instruments

A CASE OF PSEUDOHERMAPHRODITISM

RITA S. FINKLER, M.D., NEWARK, N. J.

Pseudohermaphroditism has always been a subject of fascination and interest to the urologist, gynecologist and general practitioner. Unusual cases of true hermaphroditism and pseudohermaphroditism have been brought to the attention of the medical profession from time to time. I here present another case, which is of much interest from its clinical, endocrinologic and psychologic aspects.

The patient, brought up as a girl, was first seen by me casually, five years ago, while I was attending another member of the family. At that time she was 13½ years old. She was short and stocky, was very timid, and had a deep masculine voice, a square masculine chest without any signs of breast development, and a masculine distribution of hair on the body and extremities. She was not menstruating yet.

Fig. 1.—Penis shown in place of clitoris. Vagina brought into view by the use of a speculum.

I saw the girl again a year later. Her mother called my attention to the fact that her menstrual periods were not as yet established. At that time, while doing some postgraduate work in gynecology at the Mount Sinai Hospital, I became interested in Dr. Frank's work with estrogenic substance.

I suggested such a study to the girl's mother, but as the girl was only 14½ years old, they felt that they could wait a little longer and in the meantime administer endocrine therapy. The girl received intramuscular injections of an estrogenic product and pituitary preparations by mouth, all to no avail. She also began to show signs of growth of hair on her face.

In March, 1930, her mother brought her to me in great alarm, since she discovered an appendage at the site of the clitoris. On examination the appendage appeared to be an imperforate penis about 2 inches (5 cm.) long; the crura, glans, prepuce and pigmentation were typical, except that at the site of the urethra there was a dimple but no canal visible there or anywhere else along the structure. When the patient was asked to void, the urine seemed to come from the vagina. The introitus could admit the tip of the small finger. Rectal examination revealed a small, hard uterine body lying anteriorly; no ovaries could be palpated.

Five weekly specimens of blood were taken and examined for the presence of estrogenic substance by the Frank-Goldberger technic. The fourth specimen showed a trace of the hormone.

Roentgen examination of the sella turcica was negative. The sugar tolerance test was normal. The basal metabolic rate was minus 5 per cent. I suggested a complete study of the urinary tract in order to search for further anomalies.

This study has been carried out at the Newark Beth Israel Hospital by our urologist, Dr. Sidney Keller. The urethral orifice was found to be opening into the right upper vaginal wall. The kidney, ureters and bladder were normal.

Dr. Hugh H. Young[1] of the Urological Institute of Johns Hopkins University has reported a large number of interesting cases of pseudohermaphroditism, and we deemed it advisable to consult him as to further procedures in this particular case.

Because of the great concern of the patient's parents, the girl was taken to Baltimore, where Dr. Young and an attending gynecologist gave her a detailed examination and suggested that it was essential to do an exploratory laparotomy in order to determine whether the gonads were ovaries or testicles. They also suggested a thorough exploration of the suprarenal glands in search of a possible suprarenal tumor.

The patient was operated on at the Newark Beth Israel Hospital, under tribrom-ethanol anesthesia, by Dr. Sidney Keller, Dr. William Brams and myself.

The surgical procedure consisted of a midline abdominal incision, complete exploration of the pelvic organs, and exploration and palpation of the suprarenal glands. A somewhat underdeveloped uterus and tubes and ovaries were found. A careful search failed to reveal the presence of testicles. The palpation of the suprarenal glands did not reveal the presence of a tumor. The appendix was removed and the abdomen closed.

Because the pelvic organs were those of a female, the hypertrophied clitoris was removed by the usual method for amputation of the penis.

Recovery was uneventful. Stimulating doses of x-rays were given to the regions of the pituitary gland and the ovaries, under the direction of Dr. Milton Freedman. However, following each treatment the patient became quite ill with headaches and nausea, so that roentgen therapy had to be discontinued.

She was given a two months rest period and was then placed on endocrine therapy, which was checked by the hormone study of the blood and urine.

Blood and urine hormone determinations were made after the administration of anterior pituitary-like and estrogenic hormones. Blood studies never showed more than a trace of estrogenic hormone, but the urine showed a rapid elimination of both hormones.

During periods of rest, when no hormone treatment was administered, the content of estrogenic factor in the urine was 4½ rat units per liter, estimated by the Kurzrok method; the blood began to show a more constant presence of estrogenic hormone (Frank-Goldberger technic).

After treatment over a period of one year there was some improvement in the physical and psychologic make-up of the patient. The voice began to lose its masculine tone, she became less timid and silent, and her body rounded out a little; however, she did not begin to menstruate. There was no noticeable breast development, and the growth of hair on her face continued to be her great concern. She had to shave twice a week. I felt that a growth hormone was necessary to supplement the sex hormones. An aqueous preparation of the anterior lobe of the pituitary prepared by the van Dyke and Wallen-Lawrence method (University of Chicago) was obtained from the Wilson Laboratories.

From the service of Dr. Edwin Steiner, Department of Gynecology, Newark Beth Israel Hospital.

Read before the annual meeting of the Alumnae Association of the Women's Medical College, Philadelphia, June 6, 1933.

1. Young, H. H.: Bull. Johns Hopkins Hosp. **35**:165 (June) 1924.

I used this preparation in conjunction with filtered pregnancy urine. Certain German scientists assert that pregnancy urine from the fourth to the seventh month contains not only estrogenic and anterior pituitary-like hormones but also a growth hormone.

Five cubic centimeters of filtered pregnancy urine and 1 cc. of the growth-inducing preparation were given intramuscularly every other day. This was supplemented by diathermy to vascularize the pelvis. Small doses of desiccated thyroid were given at intervals. March 16, 1933, after eight or ten weeks, when the patient was 18½ years of age, she had her first menstrual period, which lasted seven days. Besides the establishment of the period, the growth of hair on her face began to diminish. She uses a hair remover for her face only once every two weeks; her features and body are rounding out, the breasts are beginning to develop, and the voice is almost entirely feminine in character.

The girl is bright and alert and looks very happy. Until about six months ago she spoke little, was very self conscious and looked like a hunted animal.

After her first menstrual period, she returned to me for further treatment of filtered urine injections and pelvic diathermy. Her second period occurred after six weeks of this treatment. The growth hormone was not used, since a fresh supply was not available at that time. So far, the girl has had three more periods, from four to five weeks apart, lasting four or five days.

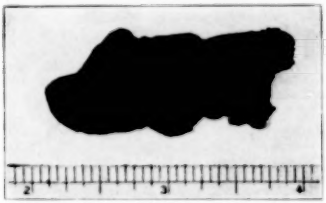

Fig. 2.—Removed appendage shows all the characteristics of a penis except for the absence of a urethra.

COMMENT

Many striking and varied cases of true hermaphroditism and pseudohermaphroditism have been reported in medical literature. The most interesting case is that reported by Dr. James C. Masson [2] in 1925 and by Dr. Burden [3] in 1924, in which an apparently normal man of 30 developed periodic attacks of hematuria, lasting from three to four days and appearing at intervals of from four to five weeks.

At the age of 40 this man was operated on for an abdominal tumor and found to have a didelphic uterus, both horns being distended with menstrual blood, the cervix leading into a small pouch, which opened into the urethra. Normal ovaries containing cysts were found in the broad ligaments, and testicular tissue was found on each side, containing spermatozoa in the ducts.

In true hermaphroditism and pseudohermaphroditism the change in secondary sex characters usually appears at the time of puberty, when the whole chain of endocrine glands receives an impetus to new and vigorous activities. The change in the growing child is noticed by the parents, and any abnormalities become evident at that time.

It is usually at this period that the physician is consulted, and the responsibility of determining the true sex of the individual often rests on the consultant.

Sometimes it is best to bring up the individual as a female in spite of the presence of male gonads, and vice versa. Environment, inclinations and social standing must be considered. The point is well illustrated by the case reported by Dr. Walton Martin,[4] in which a deaf and dumb imbecile brought up as a girl was later proved to have undescended testicles in the inguinal regions and a penis bound down by adhesions; the urethra opened into a vagina. It was deemed best to remove the testicles, amputate the penis, and leave the patient as a girl.

Recent advances in the hormone study of the blood and urine have proved to be of considerable help in the diagnosis and treatment of the patient whose case is presented on these pages.

Later studies showed the gradual increase in the ovarian activity and also the presence of a possible low renal threshold; the latter conclusion is drawn from the fact that the ovarian and pituitary-like preparations administered intramuscularly were rapidly eliminated in the urine.

SUMMARY

The value of the results of the blood and urine hormone studies is as follows:

1. Direct aid to diagnosis and treatment.
2. Indication of the presence of the ovaries and the amount of ovarian activity.
3. Determination of the renal threshold by the rate of elimination of hormones.

99 Lyons Avenue.

2. Masson, J. C.: True Hermaphroditism, Am. J. Obst. & Gynec. 9: 81-86 (Jan.) 1925.
3. Burden, V. G.: J. Urol. 12: 153 (Aug.) 1924.

SUPRARENAL VIRILISM IN A WOMAN

(TUMOR OF AN EXTRARENAL SUPRARENAL REST)

ANATOLE KOLODNY, M.D., Ph.D., SIOUX CITY, IOWA

Virchow's statement "propter ovarium solum mulier est quod est" (woman is what she is solely because of the ovary) is refuted by present-day knowledge of the functional relationship of the various ductless glands to the sexual life of woman. Since Apert in 1910 called attention to the influence of a hyperplasia of the suprarenals on the female sex characteristics, numerous contributions to this question have appeared in the literature and abundant clinical material demonstrating this fact has been placed on record. Anatomic studies have appeared explaining this functional relationship: since the anlage of the suprarenal cortex appears to be close to the sex gland anlage, both primordia partly coalesce and hence their functional interdependence in later life.

For this clinical relationship Gallais coined the descriptive term "syndrome génitosurrénale." The literature abounds with reports of cases demonstrating this syndrome, in which tumors of the suprarenals cause sex abnormalities. However, it has never been sufficiently established that similar sex disturbances might appear in the wake of a tumor arising from an extrarenal suprarenal rest. The only literature dealing with sexual abnormalities appearing as a consequence of tumors of extrarenal suprarenal rests refers to tumors of the ovary, the "ovarian hypernephromas," which probably are related to the arrhenoblastomas.

The extrarenal suprarenal rests first described by Marchand, the so-called Marchandsche Nebennieren, are to be found distally to the lower pole of the kidney, between the kidney and the genital glands. In the female, these rests are found in the ligamentum latum and in the male in the neighborhood of the testis and spermatic cord. Later, Schmorl described suprarenal rests also in the region of the solar plexus. The literature does not contain any evidence that the latter suprarenal rests may give rise to tumors leading to sexual disturbances.

I aim to place on record an unusual case of the "syndrome génitosurrénale," which accompanied a cortical suprarenal tumor arising in an extrarenal suprarenal rest in the region of the solar plexus.

A white woman, aged 37, the mother of a grown son, felt a lump in the left epigastrium in the fall of 1932. The lump was growing fast and soon she complained of digestive diffi-

4. Martin, Walton: Pseudohermaphroditismus Masculinus, S. Clin. North America 9: 535-544 (June) 1929.

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Fig. 1.—Penis shown in place of clitoris. Vagina brought into view by the use of a speculum.

I saw the girl again a year later. Her mother called my attention to the fact that her menstrual periods were not as yet established. At that time, while doing some postgraduate work in gynecology at the Mount Sinai Hospital, I became interested in Dr. Frank's work with estrogenic substance.

I suggested such a study to the girl's mother, but as the girl was only 14½ years old, they felt that they could wait a little longer and in the meantime administer endocrine therapy. The girl received intramuscular injections of an estrogenic product and pituitary preparations by mouth, all to no avail. She also began to show signs of growth of hair on her face.

In March, 1930, her mother brought her to me in great alarm, since she discovered an appendage at the site of the clitoris. On examination the appendage appeared to be an imperforate penis about 2 inches (5 cm.) long; the crura, glans, prepuce and pigmentation were typical, except that at the site of the urethra there was a dimple but no canal visible there or anywhere else along the structure. When the patient was asked to void, the urine seemed to come from the vagina. The introitus could admit the tip of the small finger. Rectal examination revealed a small, hard uterine body lying anteriorly; no ovaries could be palpated.

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This study has been carried out at the Newark Beth Israel Hospital by our urologist, Dr. Sidney Keller. The urethral orifice was found to be opening into the right upper vaginal wall. The kidney, ureters and bladder were normal.

Dr. Hugh H. Young[1] of the Urological Institute of Johns Hopkins University has reported a large number of interesting cases of pseudohermaphroditism, and we deemed it advisable to consult him as to further precedures in this particular case.

Because of the great concern of the patient's parents, the girl was taken to Baltimore, where Dr. Young and an attending gynecologist gave her a detailed examination and suggested that it was essential to do an exploratory laparotomy in order to determine whether the gonads were ovaries or testicles. They also suggested a thorough exploration of the suprarenal glands in search of a possible suprarenal tumor.

The patient was operated on at the Newark Beth Israel Hospital, under tribrom-ethanol anesthesia, by Dr. Sidney Keller, Dr. William Brams and myself.

The surgical procedure consisted of a midline abdominal incision, complete exploration of the pelvic organs, and exploration and palpation of the suprarenal glands. A somewhat underdeveloped uterus and tubes and ovaries were found. A careful search failed to reveal the presence of testicles. The palpation of the suprarenal glands did not reveal the presence of a tumor. The appendix was removed and the abdomen closed.

Because the pelvic organs were those of a female, the hypertrophied clitoris was removed by the usual method for amputation of the penis.

Recovery was uneventful. Stimulating doses of x-rays were given to the regions of the pituitary gland and the ovaries, under the direction of Dr. Milton Freedman. However, following each treatment the patient became quite ill with headaches and nausea, so that roentgen therapy had to be discontinued.

She was given a two months rest period and was then placed on endocrine therapy, which was checked by the hormone study of the blood and urine.

Blood and urine hormone determinations were made after the administration of anterior pituitary-like and estrogenic hormones. Blood studies never showed more than a trace of estrogenic hormone, but the urine showed a rapid elimination of both hormones.

During periods of rest, when no hormone treatment was administered, the content of estrogenic factor in the urine was 4½ rat units per liter, estimated by the Kurzrok method; the blood began to show a more constant presence of estrogenic hormone (Frank-Goldberger technic).

After treatment over a period of one year there was some improvement in the physical and psychologic make-up of the patient. The voice began to lose its masculine tone, she became less timid and silent, and her body rounded out a little; however, she did not begin to menstruate. There was no noticeable breast development, and the growth of hair on her face continued to be her great concern. She had to shave twice a week. I felt that a growth hormone was necessary to supplement the sex hormones. An aqueous preparation of the anterior lobe of the pituitary prepared by the van Dyke and Wallen-Lawrence method (University of Chicago) was obtained from the Wilson Laboratories.

From the service of Dr. Edwin Steiner, Department of Gynecology, Newark Beth Israel Hospital.

Read before the annual meeting of the Alumnae Association of the Women's Medical College, Philadelphia, June 6, 1933.

1. Young, H. H.: Bull. Johns Hopkins Hosp. **35**:165 (June) 1924.

I used this preparation in conjunction with filtered pregnancy urine. Certain German scientists assert that pregnancy urine from the fourth to the seventh month contains not only estrogenic and anterior pituitary-like hormones but also a growth hormone.

Five cubic centimeters of filtered pregnancy urine and 1 cc. of the growth-inducing preparation were given intramuscularly every other day. This was supplemented by diathermy to vascularize the pelvis. Small doses of desiccated thyroid were given at intervals. March 16, 1933, after eight or ten weeks, when the patient was 18½ years of age, she had her first menstrual period, which lasted seven days. Besides the establishment of the period, the growth of hair on her face began to diminish. She uses a hair remover for her face only once every two weeks; her features and body are rounding out, the breasts are beginning to develop, and the voice is almost entirely feminine in character.

The girl is bright and alert and looks very happy. Until about six months ago she spoke little, was very self conscious and looked like a hunted animal.

After her first menstrual period, she returned to me for further treatment of filtered urine injections and pelvic diathermy. Her second period occurred after six weeks of this treatment. The growth hormone was not used, since a fresh supply was not available at that time. So far, the girl has had three more periods, from four to five weeks apart, lasting four or five days.

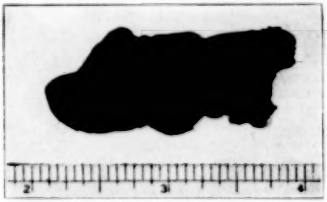


Fig. 2.—Removed appendage shows all the characteristics of a penis except for the absence of a urethra.

COMMENT

Many striking and varied cases of true hermaphroditism and pseudohermaphroditism have been reported in medical literature. The most interesting case is that reported by Dr. James C. Masson[2] in 1925 and by Dr. Burden[3] in 1924, in which an apparently normal man of 30 developed periodic attacks of hematuria, lasting from three to four days and appearing at intervals of from four to five weeks.

At the age of 40 this man was operated on for an abdominal tumor and found to have a didelphic uterus, both horns being distended with menstrual blood, the cervix leading into a small pouch, which opened into the urethra. Normal ovaries containing cysts were found in the broad ligaments, and testicular tissue was found on each side, containing spermatozoa in the ducts.

In true hermaphroditism and pseudohermaphroditism the change in secondary sex characters usually appears at the time of puberty, when the whole chain of endocrine glands receives an impetus to new and vigorous activities. The change in the growing child is noticed by the parents, and any abnormalities become evident at that time.

It is usually at this period that the physician is consulted, and the responsibility of determining the true sex of the individual often rests on the consultant.

Sometimes it is best to bring up the individual as a female in spite of the presence of male gonads, and vice versa. Environment, inclinations and social standing must be considered. The point is well illustrated by the case reported by Dr. Walton Martin,[4] in which a deaf and dumb imbecile brought up as a girl was later proved to have undescended testicles in the inguinal regions and a penis bound down by adhesions; the urethra opened into a vagina. It was deemed best to remove the testicles, amputate the penis, and leave the patient as a girl.

Recent advances in the hormone study of the blood and urine have proved to be of considerable help in the diagnosis and treatment of the patient whose case is presented on these pages.

Later studies showed the gradual increase in the ovarian activity and also the presence of a possible low renal threshold; the latter conclusion is drawn from the fact that the ovarian and pituitary-like preparations administered intramuscularly were rapidly eliminated in the urine.

SUMMARY

The value of the results of the blood and urine hormone studies is as follows:

1. Direct aid to diagnosis and treatment.
2. Indication of the presence of the ovaries and the amount of ovarian activity.
3. Determination of the renal threshold by the rate of elimination of hormones.

99 Lyons Avenue.

2. Masson, J. C.: True Hermaphroditism, Am. J. Obst. & Gynec. **9**: 81-86 (Jan.) 1925.
3. Burden, V. G.: J. Urol. **12**: 153 (Aug.) 1924.

SUPRARENAL VIRILISM IN A WOMAN

(TUMOR OF AN EXTRARENAL SUPRARENAL REST)

ANATOLE KOLODNY, M.D., Ph.D., SIOUX CITY, IOWA

Virchow's statement "propter ovarium solum mulier est quod est" (woman is what she is solely because of the ovary) is refuted by present-day knowledge of the functional relationship of the various ductless glands to the sexual life of woman. Since Apert in 1910 called attention to the influence of a hyperplasia of the suprarenals on the female sex characteristics, numerous contributions to this question have appeared in the literature and abundant clinical material demonstrating this fact has been placed on record. Anatomic studies have appeared explaining this functional relationship: since the anlage of the suprarenal cortex appears to be close to the sex gland anlage, both primordia partly coalesce and hence their functional interdependence in later life.

For this clinical relationship Gallais coined the descriptive term "syndrome génitosurrénale." The literature abounds with reports of cases demonstrating this syndrome, in which tumors of the suprarenals cause sex abnormalities. However, it has never been sufficiently established that similar sex disturbances might appear in the wake of a tumor arising from an extrarenal suprarenal rest. The only literature dealing with sexual abnormalities appearing as a consequence of tumors of extrarenal suprarenal rests refers to tumors of the ovary, the "ovarian hypernephromas," which probably are related to the arrhenoblastomas.

The extrarenal suprarenal rests first described by Marchand, the so-called Marchandsche Nebennieren, are to be found distally to the lower pole of the kidney, between the kidney and the genital glands. In the female, these rests are found in the ligamentum latum and in the male in the neighborhood of the testis and spermatic cord. Later, Schmorl described suprarenal rests also in the region of the solar plexus. The literature does not contain any evidence that the latter suprarenal rests may give rise to tumors leading to sexual disturbances.

I aim to place on record an unusual case of the "syndrome génitosurrénale," which accompanied a cortical suprarenal tumor arising in an extrarenal suprarenal rest in the region of the solar plexus.

A white woman, aged 37, the mother of a grown son, felt a lump in the left epigastrium in the fall of 1932. The lump was growing fast and soon she complained of digestive diffi-

4. Martin, Walton: Pseudohermaphroditismus Masculinus, S. Clin. North America **9**: 535-544 (June) 1929.

culties. About eight months before she had felt the lump, menstruation had stopped entirely. Two months after the cessation of menstruation she was growing a mustache and hair on the chin. The thorax as well as the linea alba above and below the navel were covered with hair. During the last six months, she felt a fulness in her head and thumping in her ears and head when she was lying in bed. Despite a sick feeling in the stomach and an inability to consume proper amounts of food, she gained 8 pounds (3.6 Kg.) in six months.

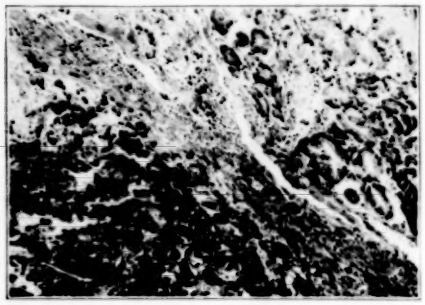


Fig. 1.—Section of the tumor, which penetrated through the muscular layer of the stomach and approached the gastric mucosa.

She was rather obese, her voice was coarse and ugly and the skin was red and rough. Instead of the female horizontal pubescence there was a definite male vertical. The face, chin, upper lip, forearms, arms, thighs and legs were covered with hair. The scalp was dry. The clitoris was at least twice the normal size. The labia were covered with hair and the breasts were quite small. The blood pressure in millimeters of mercury was 185 systolic and 105 diastolic. The hemoglobin was 35 per cent (Dare).

An examination of the abdomen showed a tumor the size of a child's head in the epigastrium to the left of the middle line. The tumor felt smooth, soft, elastic and definitely adherent to the anterior abdominal wall. Palpation and moving of the tumor caused eructations of gas. The gastric secretion following the ingestion of a test meal showed a complete absence of free hydrochloric acid and a greatly reduced combined acidity. There was in the gastric contents definite evidence of blood. A fluoroscopic examination showed a large filling defect along the greater curvature of the stomach. The transverse colon was fixed to the tumor at its inferior border.

Because of the masculinization of the patient, suprarenal tumor was suspected. An examination of the kidneys showed them to be normal in size, location and function. With these observations I was rather at a loss as to the exact diagnosis, although it was evident that surgery was indicated and justified. The patient was operated on, December 20. Several blood transfusions preceded the operation. The tumor was found to be the size of a child's head, adherent to the anterior abdominal wall. The transverse colon was tightly stretched over the inferior and posterior aspect of the tumor. A careful dissection of the transverse colon showed that the tumor approached it through the mesocolon. One could definitely distinguish the two sheets of the peritoneum forming the mesocolon, pushed apart by the tumor that was wedging in from behind and approaching the transverse colon. Following the dissection of the transverse colon the tumor was free throughout, with the exception of its superior aspect where it approached the stomach. Here there was a very intimate connection between the tumor and the stomach. The tumor invaded the stomach, destroyed a large portion of the greater curvature and grew into the stomach cavity, causing a narrowing and obstruction of it. Since only a resection of the stomach would make possible a complete removal of the tumor, gastric resection according to the first method of Billroth was done, and the tumor together with 15 cm. of the stomach removed.

The patient made a good postoperative recovery. She left the hospital on the fourteenth day after operation. The refeminization of the patient was striking. Six weeks after the operation she menstruated for the first time in the past ten months. Her libido, which had been absent for the past year and a half, commenced to return. Her voice became more feminine and the growth of hair on the face was disappearing. She kept improving rapidly until six months after the operation, when a pain developed in the right side of the chest. A roentgen examination revealed pulmonary metastases, and the patient died seven months after the operation. Up to the time of her death her appearance kept getting more feminine and menstruation remained normal.

The pathologic specimen showed the distal half of the stomach invaded by a tumor weighing 1,250 Gm. The tumor was round, soft, fragile, grayish yellow and very vascular, containing many hemorrhagic areas. Numerous yellow white nodules were seen dispersed throughout the soft hemorrhagic mass. The capsule of the tumor was intact except at the point of invasion of the stomach.

The histologic examination showed wide strands of large clear cells, anastomosing freely with one another. Abundant droplets of lipoids were demonstrated in the cells, while no sign of degeneration was seen in them. The Lubarsch glycogen reaction was positive. Widely gaping thin-walled blood vessels coursed between the wide strands of polygonal cells. In other areas a tubular perivascular arrangement predominated. The tubules were surrounded by a vascular stroma. Large polyhedral cells with round or oval nuclei formed these tubules. The cytoplasm of the cells was vacuolated or foamy from the presence of fat or doubly refractive myelin. In general the appearance of the growth recalled the suprarenal cortex, and the general arrangement of the cells, connective tissue and vessels suggested the zona fasciculata.

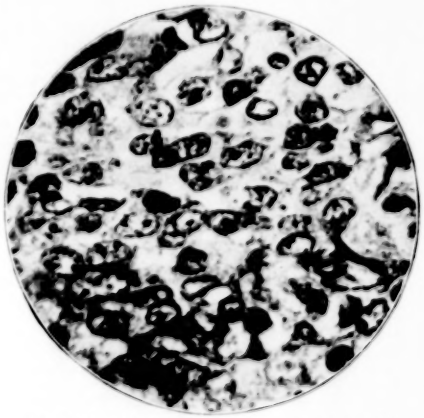


Fig. 2.—Section showing the foamy appearance of the cells.

The situation of this tumor as found at operation between the leaves of the mesocolon suggests the origin of the tumor from a suprarenal rest in the region of the solar plexus. Such a situation of an extrarenal suprarenal rest is unusual, since most suprarenal rests are found along the internal spermatic vein or in the neighborhood of the pelvic organs. This is the first report of a case of suprarenal hirsutism developing as a result of a cortical suprarenal tumor arising in a suprarenal rest in the neighborhood of the solar plexus.

727 Frances Building.

PRIMARY CARCINOMA OF THE LUNG IN A TWENTY-THREE YEAR OLD MAN

L. A. CROWELL, JR., M.D., LINCOLNTON, N. C.

Since primary carcinoma of the lung is rare in the twenties, I thought it would be of interest to present this case:

H. D. R., a man, aged *23*, a textile foreman, admitted to the Lincoln Hospital, July 14, 1933, suffered chiefly from cough, dyspnea, pain in the right side of the chest and weakness. The illness began May *26*, seven weeks before admission, with the sudden development of a cough with expectoration of brown sputum. The family stated that he had seemed more irritable and out of sorts since February 1933 and had lost weight during that time, although he had had no definite localizing symptoms. The cough got steadily worse until two weeks before admission, when the patient, while at work, suddenly had a severe lancinating pain in the middle of the right chest, made worse by inspiration and by the beating of the heart. He immediately sought medical aid, went to bed and received symptomatic treatment.

During the succeeding ten days the cough disappeared, the expectoration decreased and the pain abated. A tuberculosis specialist at this time recommended sanatorium observation.

July 11 the patient suddenly became more dyspneic, the pain, dull in character, became more intense, cyanosis increased, weakness increased, appetite disappeared, the digestion became poorer, and the heart beats became more frequent.

Previous to the present illness the patient had always been in rugged good health. He had worked in the spinning room of a cotton mill for ten years. The patient had influenza one year before but had never had pneumonia. There was no history of lung disease in his or in his wife's family.

On admission the patient's temperature was 100.4 F., the pulse was 100 and respiration was 30 and labored. The blood pressure was 125 systolic and 85 diastolic. There was a moderate amount of pyorrhea, the tongue was coated a brownish white, the tonsils were normal and the thyroid gland was slightly palpable.

The superficial veins in the neck and in the epigastric and hypochondriac regions were moderately distended. The patient was laboring for breath and made a slight expiratory grunt. The skin and mucous membranes were slightly cyanotic. At this time there was a noticeable puffiness in the right supraclavicular space and a slight fulness about the head, neck and the upper half of the chest. The patient was unable to sit or stand for more than thirty seconds without going into a violent paroxysm of coughing, followed by severe dyspnea and cyanosis. The heart rate greatly increased at each such attempt. No adventitious heart sounds were heard. The cardiac apex was displaced 1 inch to the left.

Examination of the right lung revealed diminished expansion, a flat note below the second rib anteriorly, and dulness from the apex to the second rib. Breath sounds over the entire side were greatly diminished. Whispered voice sounds were increased, especially over the upper half. Tactile vocal fremitus was diminished over the entire side. Three or four punctate scars from unsuccessful attempts made to aspirate the right pleural space, seven and ten days before admission, were found about the inferior angle of the right scapula.

Examination of the left lung revealed no abnormalities except slight prolongation of expiration and slight exaggeration of breath sounds.

The epigastric and hypochondriac veins were distended. The right lobe of the liver was enlarged to four fingerbreadths below the costal margin, and the left lobe was two fingerbreadths below. All reflexes were negative.

The blood count revealed 12,000 leukocytes, of which 78 per cent were polymorphonuclears; hemoglobin was 75 per cent; the urine was normal and the blood Wassermann reaction was negative. A single roentgenogram of the chest revealed the right lung field completely blotted out by an opaque density, except for two or three irregular small areas of greater transmission of the rays in the upper lobe area. An oblique roentgenogram of the chest, made nine days after admission, showed a fluid level at the level of the clavicle. (Special precautions were taken during the aspiration, by the use of a rubber tube between the syringe and the needle, to prevent the suction of air into the pleural space during aspiration.)

On the day of admission, 650 cc. of port wine colored fluid, having a moderate tendency toward coagulation, was removed from the right pleural space. This fluid had a specific gravity of 1.0145. A differential cell count showed 94 per cent lymphocytes and 6 per cent polymorphonuclear leukocytes. The red cells were abundant. No other cells were found. Albumin was present, 10.5 per cent wet and 2 per cent dry. No tubercle bacilli were found on direct smear or on the inoculation of 1.0 cc. of fluid sediment into a guinea-pig. No aerobic growth was obtained. The patient experienced considerable relief after that aspiration.

Two days after admission an attempt to aspirate the chest was unsuccessful even at the site of the previous aspiration. On the fourth day following admission the patient began to show distinct signs of edema about the right shoulder and neck. This, at first, was nonpitting in character.

Six days after admission 800 cc. of port wine colored fluid was aspirated from the right pleural space. This contained many red cells. At the end of this operation the patient went into a paroxysm of coughing and became dyspneic and somewhat cyanotic but soon recovered his breath and color. During the succeeding week edema and cyanosis increased rapidly, and a peculiar flatness appeared in the tone of the patient's voice. Cough increased and became productive of from half an ounce to an ounce of brown, rusty and frothy sputum. The patient gradually became more restless and sleepless. The aspiration of 800 cc. of fluid seemed to relieve the dyspnea and reduce the edema slightly but not as much as the first one. On the eighth day following admission 500 cc. of the same type of fluid was withdrawn, which showed a marked tendency toward coagulation. By this time the edema of the neck, shoulder and head had become quite marked and had become pitting in character.

Ten days after admission, 250 cc. of fluid was withdrawn with difficulty. On the thirteenth day 150 cc. was withdrawn with greater difficulty, and from then on the needle failed to find the pleural space but seemed to strike tough tissue just beyond the depth at which it had been customary to obtain fluid. By this time the patient's cough had increased until it was almost continuous, in spite of liberal doses of cough medicine. While the patient was coughing there would appear over the head, neck and right side of the chest a diffuse blush. Signs of oxygen want became increasingly evident.

About August 1 the patient was put on morphine, with little apparent effect. During the third week after admission the leukocyte count was the same, but the polymorphonuclear count had moved from 78 to 85 per cent. Three days before death the patient became slightly delirious and began having hallucinations and talking at random, with occasional periods of lucidity. On the day before death the white blood count was 15,000, with 90 per cent polymorphonuclears, and examination of the urine was negative.

The edema continued and the patient's head, neck and shoulders became enormous. Toward the last he was unable to turn his head; the trachea seemed almost entirely occluded and respiration was carried on with great difficulty and effort.

Edema of the left lung appeared two days before death. There was surprisingly little displacement of the mediastinum at this time—only about 1 inch.

The temperature during his stay in the hospital ranged from 97 to 102.6 F., tending to be higher as the patient approached death; the pulse ranged between 78 and 150, tending to get higher as the patient neared death; the respiration rate ranged from 9 to 50, getting higher as the end approached, except that the rate gradually went down during the last eighteen hours.

The autopsy revealed that the right lung was a solid mass of tough but friable tissue. The upper two lobes and the upper half of the lower lobe were fairly hard and dense, but the lower half of the lower lobe was necrotic and semiliquefied. The pleural space on the right was almost completely obliterated, and the upper and middle lobes of the right lung were pressed hard into the superior mediastinum, especially against the superior vena cava, trachea and right pulmonary veins. The lumen of the superior vena cava was practically occluded and

From the Lincoln Hospital.

the trachea was bowed to the left and its lumen was reduced 75 per cent at the point of greatest pressure.

Serous fluid was found in the pericardium, the left pleural space and the peritoneal cavity. No enlarged lymphatic glands or metastases were found anywhere. The liver, however, was enlarged from chronic passive congestion.

The cut section of the diseased lung was grayish white and solid and showed small white nodules in the pleura and areas of necrosis and softening in the deeper tissue.

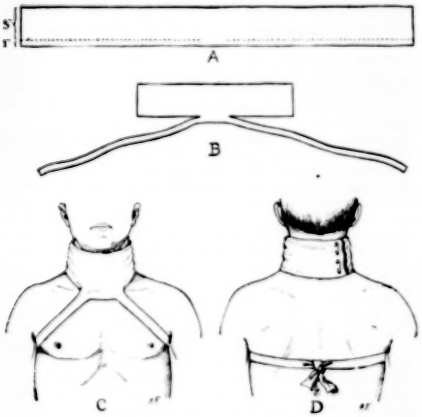
Paraffin sections showed none of the original lung structure but showed a diffuse infiltrating neoplastic growth with necrosis and hemorrhage and excessive connective tissue. The cell was spindle shaped and columnar and arranged in hollow alveolar formation in the softer tissue.

The diagnosis was carcinoma, derived from the epithelium lining the bronchus.

A SIMPLE METHOD FOR RETAINING THYROID DRESSINGS

MAXDEL WEINSTEIN, M.D., LONG ISLAND CITY, N. Y.

The low position of a thyroid incision has always presented a problem in postoperative bandaging. This region is too low for a properly applied neck bandage and too high for a chest dressing. The usual methods for retaining sterile gauze dressings following thyroidectomy include fixation by adhesive plaster



Supporting bandage for thyroid incision: *A*, pattern for cutting bandage; *B*, finished bandage; *C*, *D*, application of bandage, front and back.

or gauze bandaging. Retention by adhesive strips is uncomfortable, traumatizes sensitive skin and prohibits movements of the neck on the trunk. Gauze bandaging, on the other hand, is bulky, limits motion of the neck and causes pain and discomfort, owing to pressure and tension over the wound.

The supporting bandage that I have been using is made as follows: A flannel bandage 6 inches in width is cut to a length of approximately 36 inches. The width is reduced by a 1 inch strip, cut from each end and almost meeting at the center (*A* in the illustration), allowing the 1 inch strip to remain attached by approximately 2 inches. The wider flannel band, 5 inches in width, is used to enclose the neck, while the 1 inch band spans the chest, passes under each axilla and is tied in the back. One roughly measures the length of the wider band necessary to cover the sterile bandages and encircle the neck, and this is shortened accordingly (*B*). However, the narrower band of flannel must of necessity remain long, to be tied behind the patient (*C*, *D*). Safety pins or narrow adhesive strips are used to fasten the neck band, while a simple bow or knot finishes off the chest strip of flannel. This flannel bandage is removed with ease and may be used for several days without being replaced. In addition, patients enjoy the warmth from the flannel bandage and the complete enclosure of the neck.

From the Surgical Service of St. John's Long Island City Hospital, Dr. J. Paul McHugh, attending surgeon.

Jackson Avenue and Twelfth Street.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ORTAL-SODIUM. — Sodium *n*-hexylethyl barbiturate. — Sodium *n*-hexylethyl malonylurea. — $NaCH_3.CH_2.CH_2.CH_2.CH_3.CH_2.(C_2H_5)C\ CONHCO:NCO$. The monosodium salt of *n*-hexylethyl barbituric acid. Ortal-sodium differs from soluble barbital, U. S. P. (sodium diethylbarbiturate), in that one of the ethyl groups of the latter is replaced in the former by a *n*-hexyl group.

Actions and Uses.—The actions and uses of ortal sodium are essentially similar to those of barbital, but ortal sodium is more active than barbital and it is used in correspondingly smaller doses.

Dosage: From 0.2 to 0.4 Gm. (3 to 6 grains) followed by a glass of water. It is rarely necessary to give more than 1 Gm. (15 grains) in twenty-four hours. When oral administration is contraindicated, ortal sodium may be administered rectally.

Manufactured by Parke, Davis & Company, Detroit. U. S. patent 1,624,546 (April 12, 1927; expires 1944). U. S. trademark 302,616.

Capsules Ortal Sodium, 3 grains (0.2 Gm.).

Caution: Aqueous solutions of ortal-sodium are not stable but decompose on standing; on boiling, a precipitation occurs with evolution of ammonia.

Ortal-sodium is an odorless, white or slightly yellowish powder, with a bitter taste; very soluble in water; soluble in alcohol; practically insoluble in ether and benzine. An aqueous solution of ortal-sodium has an alkaline reaction to litmus.

Dissolve about 0.5 Gm. of ortal-sodium in 100 cc. of water, add an excess of diluted hydrochloric acid, collect the resultant hexylethyl barbituric acid on a filter, wash and dry at 90 C.: it melts at 122-125 C. Incinerate about 1 Gm. of ortal-sodium: the residue responds to tests for sodium carbonate. Boil about 0.5 Gm. of ortal-sodium with 5 cc. of a 25 per cent sodium hydroxide solution: it is decomposed with evolution of ammonia. Dissolve about 0.3 Gm. of ortal-sodium in 10 cc. of water and divide into two portions; to one portion add 1 cc. of mercuric chloride solution: a white precipitate results, soluble in an excess of ammonia; to the other portion add 5 cc. of silver nitrate solution: a white precipitate results, soluble in an excess of ammonia.

Dissolve about 0.5 Gm. of ortal-sodium in 50 cc. of water, add 5 cc. of diluted nitric acid and filter through paper: separate portions of 10 cc. each of the filtrate yield no greater opalescence on the addition of 1 cc. of silver nitrate solution than that produced by 0.25 cc. of tenth-normal hydrochloric acid in 50 cc. of water (*chloride*); no turbidity on the addition of 1 cc. of barium nitrate solution (*sulphate*). To about 0.2 Gm. of ortal-sodium in 25 cc. of water, add 1 cc. of diluted hydrochloric acid, filter through paper: the filtrate yields no coloration or precipitation on saturation with hydrogen sulphide (*salts of heavy metals*). Add about 0.1 Gm. of ortal-sodium to 1 cc. of sulphuric acid: the solution is colorless (*readily carbonizable substances*).

Transfer about 1 Gm. of ortal-sodium, accurately weighed, to a glass stoppered cylinder, add 50 cc. of anhydrous ether, stopper and shake for ten minutes; decant the supernatant liquid through filter paper and repeat twice, using 25 cc. and 15 cc. portions, respectively, of ether, utilizing the same filter; evaporate the combined filtrates to dryness in a tared beaker and dry to constant weight at 90 C.; the residue does not exceed 0.5 per cent (*uncombined hexylethyl barbituric acid*).

Dry about 1 Gm. of ortal-sodium, accurately weighed, to constant weight at 100 C.: the loss does not exceed 2.5 per cent. Transfer about 0.5 Gm. of ortal-sodium, accurately weighed, to a suitable Squibb separatory funnel, add 50 cc. of water, followed by 10 cc. of diluted hydrochloric acid; extract with eight successive portions of ether of 25 cc. each, evaporate the combined ethereal extractions to dryness in a stream of warm air and dry to constant weight at 90 C.; the amount of hexylethyl barbituric acid corresponds to not less than 90.8 per cent nor more than 91.6 per cent, calculated to the dried substance. Transfer the acidulated aqueous portion from the foregoing immiscible solvent extraction to a tared platinum dish and evaporate to dryness on a steam bath; to the residue obtained add 5 cc. of sulphuric acid; heat *cautiously* until the excess of sulphuric acid has been volatilized; repeat twice, using portions of 1 cc. each of sulphuric acid each time; add about 0.5 Gm. of ammonium carbonate; ignite to constant weight, and weigh as sodium sulphate: the percentage of sodium corresponds to not less than 8.5 per cent, nor more than 9 per cent when calculated to the dried substance.

DIGALEN-ROCHE (CLOETTA) (See New and Nonofficial Remedies, 1934, p. 158).

The following dosage form has been accepted:

Tablets Digalen-Roche, 1 Cat Unit.

DEXTROSE (See New and Nonofficial Remedies, 1934, p. 270).

The following dosage forms have been accepted:

Ampoule Solution Dextrose 25 Gm. in 50 cc.: Each ampule contains dextrose-U. S. P. 25 Gm., in distilled water to make 50 cc.; buffered with sodium citrate 0.25 per cent.

Prepared by John Wyeth & Brother, Inc., Philadelphia.

Ampoule Solution Dextrose 50 Gm. in 100 cc.: Each ampule contains dextrose-U. S. P. 50 Gm., in distilled water to make 100 cc.; buffered with sodium citrate 0.25 per cent.

Prepared by John Wyeth & Brother, Inc., Philadelphia.

PROCAINE BORATE-SEARLE (See New and Nonofficial Remedies, 1934, p. 59).

The following dosage form has been accepted:

Tablets Procaine Borate without Epinephrine: Each tablet contains procaine borate-Searle 0.03 Gm. (½ grain).

SHEFIELD B. ACIDOPHILUS MILK.—A whole milk cultured with Bacillus acidophilus. It contains not less than 250 million viable organisms per cubic centimeter at the time of sale.

Actions and Uses.—See general article, Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1934, p. 250.

Dosage.—For adults 1,000 cc. per day, increased or decreased to meet individual requirements. When employed in infant feeding, it may be diluted with boiled water. Sheffield B. acidophilus milk must be kept in a cool place and should be used prior to the expiration date stamped on the label.

Manufactured by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y. (Sheffield Farms Co., Inc., New York, N. Y., distributor). No U. S. patent or trademark.

Fresh whole cow's milk with a butter fat content of not less than 3 per cent is sterilized at 100 C. for two hours. After cooling to 37 C., the milk is inoculated with a twenty hour seed culture of pure strains of Bacillus acidophilus. After inoculation the milk is kept at 37 C. for from twenty to twenty-four hours until an acidity is reached such that 10 cc. will require for neutralization 8 cc. of tenth-normal sodium hydroxide solution, phenolphthalein being used as indicator. The product is then cooled, agitated until homogeneous and transferred to one-half pint, pint and quart bottles. The strains of Bacillus acidophilus used are isolated by Cheplin. To insure a high degree of activity and colonization within the human alimentary tract, the organism is freshly isolated from human intestinal contents as frequently as is found necessary through actual feeding experiments.

PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT. PAUL NICHOLAS LEECH, Secretary.

CYSTEINE HYDROCHLORIDE

Substances containing a negatively charged sulphur atom have been used in the treatment of cutaneous ulcers. The work of Reimann[1] with thiocresol was a forerunner. Thiocresol possessed certain disadvantages, such as undue irritation and unpleasant odor. Kendall,[2] after isolating crystalline glutathione, suggested that it might have essentially the same effect as thiocresol, owing to the common presence of the S-H or sulphydryl radical. The results obtained by Brunsting and Simonsen[3] showed glutathione definitely effective but, because of expense, cysteine was substituted by these authors in subsequent investigations.

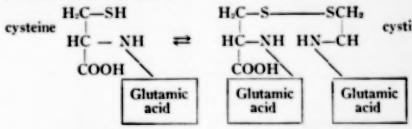
Intractable, persistent, unhealthy ulcers of various origin are reported as responding with a fair measure of success when due to trauma, burns and circulatory defects, but practically no response is found in the specific ulcerations (i. e., scrofulous sinuses, Bazin ulcers, nodulo-ulcerative syphilids, pustular psoriasis, lichen simplex and lichen planus).

1. Reimann, S. P.: Use and Reasons for the Use of Thiocresol to Stimulate Wound Healing, J. A. M. A. **94:** 1369 (May 3) 1930.

2. Kendall, E. C.; McKenzie, B. F., and Mason, H. L.: A Study of Glutathione: I. Its Preparation in Crystalline Form and Its Identification, J. Biol. Chem. **84:** 657 (Nov.) 1929.

3. Brunsting, L. A., and Simonsen, D. G.: Cutaneous Ulcers Treated by the Sulphydryl Containing Amino-Acid Cysteine, J. A. M. A. **101:** 1937 (Dec. 16) 1933.

It is worthy of comment that an amino-acid such as cysteine, whose bimolecular oxidation product, cystine, is one of those qualitatively necessary in the protein fraction of the diet, should exhibit such stimulating properties on damaged tissue, but the action may be explained on reasonably sound theoretical grounds, which, however, are entirely speculative. The formula for glutathione is:



Reduced glutathione Oxidized glutathione

It is the opinion of F. Gowland Hopkins that glutathione plays a very significant if not fundamental rôle in oxidative metabolism within the cell. He has demonstrated[4] a relatively constant concentration of about 0.01 per cent in healthy tissues. It is apparent that the glutamic acid is, for all practical purposes, inert and that the reaction centers in the SH group and the cysteine ⇄ cystine conjugation. Whether cysteine and cystine can or do act as does glutathione is not so important, since an additional conjugation with glutamic acid could conceivably take place within or adjacent to the cell, thus producing the active compound.

The possibility immediately suggests itself that the stimulating properties of cysteine, applied locally, lie in the production of a greater intracellular metabolism brought about either by the cysteine itself or by glutathione formed at the site of application. The simple chain of events would be (as is well demonstrated for cell growth):

Increased metabolism → karyokinesis → multiplication → tissue repair.

That this may actually be the mechanism is suggested more strongly by the fact that the lesions wherein good results were obtained consisted in ischemic, unhealthy, devitalized tissues *not* the seat of specific disease, while little effect was found in the specific ulcerations.

Adlersberg and Perutz[5] have effected more rapid healing of indolent leg ulcers by the local application of insulin, a compound that is known to contain suboxidized sulphur. While Hammett[6] was unable to verify their work with oxidized glutathione, both he and Voegtlin and Chalkley[7] (the latter working with Amoeba proteus) have demonstrated increased nuclear and cytoplasmic division in the presence of glutathione in 1:100,000 dilution. The effect is reported to be much more pronounced in the case of more mature (larger) amebas and practically absent in the smallest specimens. Results of that sort would apparently indicate that the sulphydryl group might not have a stimulating effect on malignant tissue, since such tissue is relatively immature. However, in the light of other studies, by Voegtlin and Thompson[8] and by Lecloux[9] it appears certain that cysteine or a sulphydryl (–SH) compound should not be applied to malignant or precancerous ulcerations. These authors have shown that active tumor tissue contains as much glutathione as liver substance, which is among the richest of all organs in that compound. In the same paper on Amoeba proteus, Chalkley and Voegtlin[7a] record the proliferative effect on nuclei to be much more pronounced than that on cytoplasm, a fact that further militates against the use of

4. Hopkins, F. G., and Elliott, K. A. C.: Relation of Glutathione to Cell Respiration with Special Reference to Hepatic Tissue, Proc. Roy. Soc., B, London **109:** 88 (Sept. 1) 1931.

5. Adlersberg, D., and Perutz, A.: Beeinflussung der Regenerationsfähigkeit der Haut durch lokale Applikation von Insulin, Klin. Wchnschr. **6:** 108 (Jan. 15) 1927.

6. Hammett, F. S.: Chemical Stimulus Essential for Growth by Increase in Cell Number, Proc. Am. Philos. Soc. **68:** 131 (April) 1929; Cell Division and Cell Growth in Size, Protoplasma **7:** 535 (Sept.) 1929.

7. (*a*) Chalkley, H. W., and Voegtlin, Carl: Chemistry of Cell Division: Inhibition of Cell Division of Amoeba Proteus by High Dilutions of Copper Salts—Antagonism of Copper and Glutathione, Pub. Health Rep. **47:** 535 (March 4) 1932. (*b*) Voegtlin, Carl, and Chalkley, H. W.: Chemistry of Cell Division: I. The Effect of Glutathione on Cell Division in Amoeba Proteus, ibid. **45:** 3041 (Dec. 12) 1930.

8. Voegtlin, Carl, and Thompson, J. W.: Glutathione Content of Normal Animals, J. Biol. Chem. **70:** 793-800 (Nov.) 1926; Glutathione Content of Tumor Animals, ibid. **70:** 801-806 (Nov.) 1926.

9. Lecloux, J.: Facteurs énergétiques de la croissance des tissue cancereux, Liege med. **22:** 329; 405; 452, 1929.

sulphydryl-containing substances on malignant tissue, which always contains a greater percentage of mitotic or potentially mitotic nuclear material, and relatively less cytoplasm, than its normal counterpart.

It should be remembered that, however promising and unique (in modus operandi) the method may be, it should, until the development of further confirmatory evidence, be considered as a possibly helpful adjunct to the older, established treatments for refractory cutaneous ulcers of nonspecific origin.

It is well to emphasize that cysteine should not be used in the treatment of any cutaneous ulceration in which possibly malignant or premalignant conditions cannot be excluded.

The Council voted to postpone consideration of cysteine hydrochloride until further evidence becomes available. If sufficient data warrant acceptance in the future, the A. M. A. Chemical Laboratory will be asked to investigate the product with a view to elaborating standards.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

I-X BARIUM MEAL OMITTED FROM N. N. R. AND I-X BARIUM UNFLAVORED NOT ACCEPTABLE FOR N. N. R.

I-X Barium Meal (Dick X-Ray Co.) was accepted by the Council in 1929 as a barium sulphate preparation for use in roentgen examination of the gastro-intestinal tract. It is described as a mixture of barium sulphate, U. S. P., 85 per cent; native aluminum silicate, 10 per cent; malted milk (malt extract powder), 5 per cent, and a trace of saccharin. The period for which the product was accepted expiring at the close of 1932, the firm was asked for evidence for its eligibility for continued inclusion in New and Nonofficial Remedies.

A short time previously the firm had presented for the Council's consideration an additional barium sulphate preparation for roentgen examination of the gastro-intestinal tract, I-X Barium Unflavored, stated to consist of barium sulphate U. S. P. 92½ per cent and "the same suspension agent used in I-X Barium Meal in the amount of 7½%."

The firm submitted an advertising circular dealing with both the accepted and the newly submitted products. The Council found a number of objections to this circular: some generalized claims of superlative merit and the claim that with the use of the products "Constipation is Minimized" and "Better Radiographs Result." The firm was asked to tone down the superlative statements and to submit evidence to substantiate the two claims just mentioned. The firm was also informed that, in accordance with the Council's requirements for similar products, the word "sulphate" should appear in the names of the two products and, further, that a quantitative statement of the composition should appear in advertising and on the labels of the respective products. Ample time was accorded the firm to use up existing stock of the advertising and of the lithographed cans in which the products are marketed.

The firm was further informed that the product previously accepted as "I-X Barium Meal" would be reaccepted as "I-X Barium Sulphate Meal" and the product submitted as "I-X Barium Unflavored" would be accepted as "I-X Barium Sulphate Unflavored" when the advertising was revised to meet the objections stated and when agreement was given to make the stipulated changes of name on the trade packages and in the advertising.

The firm replied that it contemplated making a radical change in "I-X Barium Meal" "within two months," as a result of which new advertising and containers would be required, at which time the requests of the Council could be met. After the expiration of the stipulated time, the firm was asked whether these changes were being made. The firm has failed to give a satisfactory reply indicating its willingness to comply with the Council's rules. The Council was therefore obliged to omit "I-X Barium Meal" from New and Nonofficial Remedies and to declare "I-X Barium Unflavored" unacceptable for New and Nonofficial Remedies, without prejudice to future consideration of either or both products.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

ACCEPTANCE WITHDRAWN

BUTTER CREAM BREAD

The Anchor Bread Company, Sacramento, Calif., submitted to the Committee on Foods a white bread made by the sponge dough method, called Butter Cream Bread, prepared from flour, water, cream, sugar, salt, butter, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	33.3
Ash	1.0
Fat	3.7
Protein (N × 6.25)	6.4
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	55.3

Discussion of Name.—"Butter cream bread" has not been defined by the United States Department of Agriculture. The baking trade has no recognized trade opinion on the composition of a "butter cream bread." Although the bread contains considerable butter and cream and somewhat more milk fat than "milk bread," their quantity is not considered sufficient to warrant the emphasis of milk fat content given by the name. The continued acceptance of this bread will serve as a precedent for the adoption of similar names for other bread brands, thereby extending any misinformative connotations of the significance of the term "butter cream," and will convey the impression that this type of bread is recognized by the United States Department of Agriculture and the baking trade, which is not the case. A food name should not unduly emphasize the importance of any ingredient, thereby misleading the public as to the composition of the product or its nutritional values.

The manufacturer was advised of these opinions but is unwilling to change the name, for business reasons. The acceptance of this bread is therefore being withdrawn and it will no longer be listed among the accepted foods of the Committee.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

COFFEE EDUCATIONAL ADVERTISING

Sponsor.—Bureau of Coffee Information, New York.

The Bureau of Coffee Information is supported by the American Can Company, which developed the vacuum process for packing coffee. Its purpose is to disseminate information about coffee.

Advertising.—The advertising of this bureau is intended to promote the distribution of ground coffee in tins sealed under vacuum. The advertising provides general information on coffee, commencing with its cultivation and including various steps up to the final distribution of the roasted coffee "sealed in vacuum" in tins.

Investigation shows that freshly roasted coffee immediately sealed in vacuum in tins does not become stale in the unopened package. In this manner it is possible to deliver fresh coffee to the consumer at all times. After the can has been opened, the coffee stales as does any coffee exposed to the atmosphere.

The staleness or freshness of roasted coffee is correlated with the retention of carbon dioxide and carbon monoxide within the coffee bean. Coffee that has lost these retained gases has

also lost its freshness and possesses flavors defined as "staleness." Coffee that is quickly sealed in tins immediately after roasting retains in large measure its absorbed gases. The packing of roasted coffee in "vacuum" in tins prevents oxidation of coffee oils contributing to the well known staleness flavors.

The main advertising booklets are entitled:

Coffee Facts for Homemakers
The Story of Coffee
Coffee from Tree to Consumer
What Flavor Measurement Reveals About Keeping Coffee Fresh
The Coffee Problem
The Song of the Coffee Bird
Loose Leaflets giving information on the culture, roasting and packing of coffee and brewing of coffee beverage

CERTIFOODS CERTIFIED NURSERY FOODS—VEGETABLE PUREE

VITAMIN CONTENT GUARANTEED; NO ADDED SEASONING OR SUGAR

Distributor.—Certifoods, Inc., New York, a subsidiary of the Maltine Company, New York.

Packer.—Curtice Brothers Co., Rochester, N. Y.

Description.—Sieved vegetable mixture containing carrots, spinach and tomatoes prepared by methods efficient for retention in high degree of the natural mineral and vitamin values; no added seasoning or sugar.

Manufacture.—Definite proportions of carrots, spinach and tomatoes, prepared as previously described (THE JOURNAL, Feb. 17, 1934, p. 539), are mixed, heated to 71 C., sieved in an atmosphere of nitrogen gas, canned, processed and packed as described for Certifoods Certified Nursery Foods—Green Beans (THE JOURNAL, Oct. 3, 1931, p. 1003). The processing is for forty minutes at 116 C.

An alternative is the use of previously canned materials packed in No. 10 tins, which are subsequently treated as described above.

Analysis (submitted by manufacturer).—

	per cent
Moisture	92.8
Total Solids	7.2
Ash	0.7
Fat (ether extract)	0.2
Protein (N × 6.25)	1.1
Reducing sugars before inversion as dextrose	1.6
Reducing sugars after inversion as dextrose	2.8
Sucrose (copper reduction method)	1.3
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	4.6
Calcium (Ca)	0.04
Phosphorus (P)	0.04
Iron (Fe)	0.0007

Calories.—0.2 per gram; 6 per ounce.

Vitamins.—The methods of preparation, sieving and processing are efficient to conserve the natural vitamins in high degree.

The product is guaranteed to contain 560 units of vitamin A (Sherman method), 3 units of vitamin B (Chase and Sherman method) and 3 units of vitamin G (Bourquin and Sherman method) per ounce.

Claims of Manufacturer.—See this section for Certifoods Certified Nursery Foods—Green Beans (THE JOURNAL, Oct. 3, 1931, p. 1003).

GOLDEN STATE BRAND UNSWEETENED EVAPORATED MILK

Manufacturer.—Golden State Company, Ltd., San Francisco.

Description.—Canned unsweetened evaporated milk.

Manufacture.—The milk is collected and concentrated according to standard procedures (THE JOURNAL, April 16, 1932, p. 1376).

Analysis (submitted by manufacturer).—

	per cent
Moisture	74.1
Total solids	25.9
Ash	1.4
Fat	7.8
Protein (N × 6.38)	6.8
Lactose (by difference)	9.9

Calories.—1.4 per gram; 40 per ounce.

Vitamins and Claims of Manufacturer.—See announcement of acceptance of Evaporated Milk Association Educational Advertising (THE JOURNAL, Dec. 19, 1931, p. 1890).

HERSHEY'S MILK CHOCOLATE AND ALMONDS

Distributor.—Chocolate Sales Corporation, Hershey, Pa.

Manufacturer.—Hershey Chocolate Corporation, Hershey, Pa.

Description.—Milk chocolate containing cane sugar, milk, cacao butter, chocolate and roasted almonds.

Manufacture.—Milk chocolate (prepared as described for Hershey's Milk Chocolate (THE JOURNAL, Feb. 24, 1934, p. 606) is admixed with almonds, roasted in cacao butter, molded into bars and automatically wrapped in aluminum foil.

Analysis (submitted by manufacturer).—

	per cent
Moisture	0.6
Ash	1.9
Ash insoluble in water	1.5
Ash insoluble in acid	0.01
Fat	39.3
Total nitrogen	1.6
Protein (noncaffeine and nontheobromine N × 6.25)	10.1
Casein	3.8
Sucrose	35.5
Lactose	6.7
Whole milk solids	17.2
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	47.3
*Theobromine	0.13
*Caffeine	0.01

* By Prochnow's modification of the Beckurts-Fromme method, Arch. d. Pharmaz. 247: 698, 1910.

Calories.—5.8 per gram; 165 per ounce.

Claims of Manufacturer.—Complies with the United States Department of Agriculture definition and standard.

HAWAIIAN FINEST QUALITY PINEAPPLE

(1) BAR-JOE BRAND SLICED (VACUUM PACKED)
(2) BINCO BRAND CRUSHED
(3) BINCO BRAND SLICED (VACUUM PACKED)
(4) BING BRAND SLICED AND BROKEN SLICES (VACUUM PACKED)
(5) DELICIOUS BRAND EXTRA SLICED FANCY QUALITY (VACUUM PACKED)
(6) DELICIOUS BRAND EXTRA CRUSHED
(7) GROSSE POINTE QUALITY BRAND SLICED (VACUUM PACKED)
(8) UNITED BRAND CRUSHED
(9) UNITED BRAND SLICED AND TID-BITS (VACUUM PACKED)

Distributors.—(1), (2) and (3), The Bindley Grocery Company, Marion, Ohio. (4), (5) and (6), McTighe Grocery Company, Binghamton, N. Y. (7) R. Schayowitz and Sons, Detroit. (8) and (9), United Grocers Company, Brooklyn.

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p. 1106, and April 29, 1933, p. 1338).

PRUDENCE READY TO BROWN BEEF LOAF (PORK ADDED) WITH GRAVY

Manufacturer.—Boston Food Products Company, Boston.

Description.—A meat loaf prepared from United States inspected and passed by Department of Agriculture beef and pork, cracker meal, beef extract, flour, seasoning (sodium chloride, onion, white pepper) and potassium nitrate.

Manufacture.—United States inspected and passed by Department of Agriculture lean beef and pork cured with potassium nitrate, trimmed of gristle, sinews and other inedible matter, and peeled and sliced onions are coarsely chopped; cracker meal and gravy prepared from beef extract, flour and seasoning are added and the mixture is finely chopped and automatically filled into cans, which are sealed and processed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	71.9
Total solids	28.1
Ash	2.3
Sodium chloride	1.3
Fat (ether extract)	8.1
Protein (N × 6.25)	12.8
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	4.8

Calories.—1.5 per gram; 43 per ounce.

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SATURDAY, MARCH 24, 1934

A COMPARATIVE STUDY OF CLINICAL BISMUTH TREATMENTS

The extensive use of bismuth as a spirocheticide in the treatment of syphilis is comparatively recent. It has been recommended in particular for obstinate cases, wherein it is regarded by some as probably superior to mercury. According to expert students [1] of the subject, the clinical efficiency of treatment with bismuth compounds in syphilis has been sufficiently demonstrated by all the available methods—by clinical progress, by the disappearance of spirochetes from lesions, and by the reversal of the Wassermann reaction. Many compounds and preparations of bismuth have been employed, so that the question of choice has come to the forefront. This is particularly true because the soluble preparations involve the danger of absorption of poisonous amounts of bismuth. According to Sollmann, Cole and Henderson [1] it may be presumed that compounds which differ in solubility differ also in rapidity of absorption, and therefore of excretion, and in promptness and duration of action. If continued action is essential, as seems probable, too rapid absorption would necessitate frequent injections; and slow absorption would not only delay the effect but tend to produce cumulation and toxicity.

The extensive investigations [1] recently reported from the School of Medicine of Western Reserve University in Cleveland have thrown some light on the physiologic aspects of the action of bismuth in some of its manifold current dosage forms. The procedure was based on the thesis that since the intensity of the excretion of bismuth is determined chiefly by the concentration in the plasma, the urinary excretion especially is a fair index of the actively circulating bismuth, and this is probably the effective bismuth; for, as with mercury, the action seems to cease promptly after the administration is discontinued, when there are still considerable amounts of bismuth fixed in the tissues. Assuming, then, that the urinary excretion of bismuth reflects the concentration of the active element in the blood, the new data were secured from human patients through careful chemical analyses of the excreta. They lead to the conclusion that the resemblance between the different bismuth compounds is more striking than the differences, except for bismuth subsalicylate.

The various bismuth preparations differ materially as to speed of absorption. The watery solutions stand first, followed in order by oil solutions, oil suspensions of the tartrate, and finally oil suspension of the salicylate. According to the duration of the excretion, and therefore of the concentration and action, the sequence runs in inverse order. The height of the concentration and the total amount of bismuth excreted, which together represent the intensity of the action, are fairly parallel and depend more on the dosage and the frequency of the injection than on any other factor; the salicylate, however, occupies a special position. It appears undesirable, since its absorption is both too slow and too persistent. The fecal excretion of bismuth seems to be only about a tenth of the urinary excretion and fairly parallel to it. The Cleveland investigators have presented clear indications of the relation of the types of compounds now in use to the concentration of active bismuth in the blood secured by their use. As Sollmann and Cole clearly point out, however, this is not all that must be taken into consideration in the bismuth therapy of syphilis. Clinical usefulness includes other factors, such as pain of administration, convenience and cost, which were not involved in their inquiry.

1. Sollmann, Torald; Cole, H. N., and Henderson, Katharine I.: Excretion of Bismuth in a Series of Clinical Bismuth Treatments, Arch. Dermat. & Syph. **28**: 615 (Nov.) 1933.

VASODILATATION OF THE EXTREMITIES

In considerations of peripheral vascular disease it is becoming increasingly important to differentiate clearly between organic occlusion of the vessels and vascular spasm. Obviously the latter is conceivably subject to modification through the nervous connections that control to a considerable extent the vasomotor mechanisms of the extremities or other regions involved. In a lecture delivered before the Royal College of Surgeons of England as early as 1858, soon after Claude Bernard's classic studies on the vasomotor constriction functions of the sympathetic nervous system, Brown-Séquard [1] remarked: "In those cases of gangrene in which no obstruction has been found after death in the vessels of the dead parts, it is extremely probable that a long persistent spasm of the blood vessels has existed." Of late, various methods have been proposed to determine early in the course of peripheral vascular disease whether the diminished flow of blood to an extremity is due to simple arterial spasm or to obliterative structural disease of the blood vessels. Scott and Morton [2]

1. Brown-Séquard, C. E.: Course of Lectures on the Physiology and Pathology of the Central Nervous System: Delivered at the Royal College of Surgeons of England in May 1858, Philadelphia, 1873, p. 148.

2. Scott, W. J. M., and Morton, J. J.: Sympathetic Activity in Certain Diseases, Especially Those of the Peripheral Circulation, Arch. Int. Med. **48**: 1065 (Dec.) 1931.

of the University of Rochester Medical School have noted, in their studies of sympathetic activity, that the hyperthermia following the parenteral administration of a foreign protein was long ago advised as a method of treatment in many conditions, among them the peripheral vascular diseases. Brown [3] applied this reaction to the diagnosis of these peripheral vascular diseases, deriving a vasomotor index from a comparison of the increase in surface temperature of the foot with the increase in body temperature. This method offered the first differentiation of spasm and occlusion in the involved area. It has been described as disagreeable to patients, inconvenient to the physician, and in some cases actually attended with serious complications.

Scott and Morton's study of the sympathetic influence on the vascular system has brought to light a fundamental difference in the control of the peripheral and the splanchnic arteries. The usual surgical depth of general anesthesia entirely obliterates vasoconstriction in the extremities, while it scarcely affects that of the splanchnic area. This seems to be dependent on an anatomic or, more probably, a phylogenic difference in the vasomotor control for these regions. The vasodilatation resulting from nerve block, general anesthesia or spinal anesthesia has its limitations as a clinical procedure. Landis and Gibbon [4] of the Hospital of the University of Pennsylvania have recently pointed out that the several tests of peripheral vasodilatation at present in use, though different in method, are similar in principle. The surface temperature of the distal portion of the cool, exposed extremity is measured thermo-electrically. Dilatation of the peripheral vessels is then produced and the rise in surface temperature is recorded. The level to which the temperature rises with complete vasodilatation has been determined in persons with normal peripheral circulation. If the surface temperature fails to reach this normal level in a room at suitable temperature, the arteries supplying the part are regarded as being unable to dilate owing to organic changes in their walls.

An exceedingly simple procedure for producing vasodilatation in the lower extremities has been investigated by Gibbon and Landis.[5] They observed that immersing the forearms and hands in warm water produced vasodilatation in the lower extremities. In ten observations made on the spontaneously cool lower extremities of six normal subjects, the temperatures of the toes began to rise within fifteen minutes after the forearms were immersed in warm water. In all but one of these observations the surface temperature reached 32 C. (89.6 F.) within twenty-nine minutes after the forearms were immersed. In every instance the surface temperature exceeded 31.5 C. (88.7 F.), which Morton and Scott regarded as the minimum normal response to spinal and general anesthesia. In an extension of their studies, Landis and Gibbon [4] remark that to produce vasodilatation by this relatively simple procedure requires no special apparatus and causes much less discomfort to the patjent than the injection of typhoid vaccine or the induction of spinal or general anesthesia. Heat has been used also by Lewis and Pickering [6] and by de Takáts,[7] but special apparatus is required in the methods employed by them, the body being warmed in an electrical cabinet in the former case and by means of diathermy apparatus in the latter.

As an illustration of the practical application of the procedure of Landis and Gibbon, involving immersion of the forearms of patients in water at from 43 to 45 C. (109.4 to 113 F.), a statement of their observations may be cited. In seven patients with pain, coldness or cyanosis of the lower extremities, the temperature of the toes rose to levels above 32 C. (89.6 F.). This normal response definitely excluded the possibility of obliterative structural disease of the arteries as a cause of the diminished flow of blood in the lower extremities. Fourteen patients with thrombo-angiitis obliterans or arteriosclerosis involving the lower extremities showed varying grades of organic occlusion and spasm when tested by this method. In eight of the thirteen patients who failed to show the normal vasodilator response to warming the forearms, the results were compared with those obtained by some other method of producing vasodilatation, including the intravenous injection of typhoid vaccine, the use of spinal anesthesia and anesthetization of the posterior tibial nerve. In seven of the eight patients the clinical interpretation of the results by the two methods was the same.

In their recommendation of their entirely unobjectionable technic the Philadelphia investigators conclude that, if the surface temperature of the toes rises above 31.5 C., significant obliterative structural disease of the arteries of the lower extremity is definitely absent. If the surface temperature fails to rise to this level, organic arterial obstruction is probably present. With controlled room temperature, the approximate grade of the organic obstruction is indicated by the difference between 31.5 C. and the maximum temperature reached. For absolute certainty in the diagnosis of organic arterial obstruction the abnormal vasodilator responses obtained by warming the forearms should be confirmed by some other method of producing peripheral vasodilatation. Equally recent is the procedure involving the study of the peripheral pulse volume by means of the plethysmometer of Johnson.[8] It records the pulse

3. Brown, G. E.: The Treatment of Peripheral Vascular Disturbances of the Extremities, J. A. M. A. **87**: 379 (Aug. 7) 1926.
4. Landis, E. M., and Gibbon, J. H., Jr.: A Simple Method of Producing Vasodilatation in the Lower Extremities, Arch. Int. Med. **52**: 785 (Nov.) 1933.
5. Gibbon, J. H., Jr., and Landis, E. M.: Vasodilatation in the Lower Extremities in Response to Immersing the Forearms in Warm Water, J. Clin. Investigation **11**: 1019 (Sept.) 1932.
6. Lewis, Thomas, and Pickering, G. W.: Vasodilatation in the Limbs in Response to Warming the Body, with Evidence for Sympathetic Vasodilator Nerves in Man, Heart **16**: 33 (Oct.) 1931.
7. de Takáts, Géza: The Differentiation of Organic and Spastic Vascular Occlusions, Ann. Surg. **94**: 321 (Sept.) 1931.
8. Johnson, C. A.: Studies on Peripheral Vascular Phenomena: I. A New Device for the Study of Peripheral Vascular Phenomena in Health and Disease, Surg., Gynec. & Obst. **55**: 731 (Dec.) 1932.

volume of a digit as shown by the height of pulse waves in specially prepared tracings. According to Scupham and Johnson[9] of Northwestern University Medical School, in persons suffering from occlusive disease of the arteries of the extremities the pulse volume wave deviated sharply in size and contour from that obtained in normal persons. The method is an objective one, more direct, it is asserted, and in some respects more reliable than the determination of skin temperature. The procedure is simple and easy of application, and with it permanent records may be obtained for accurate subsequent comparison. It is believed to be applicable, as a criterion, to all the methods for differential diagnosis between organic occlusion and angiospasm, in the same manner that determinations of skin temperature are now used. It is valuable in the determination of occlusion in the smaller arteries of a digit when other methods are not applicable. Evidently the study of peripheral vascular disease is entering on a productive period that is likely to initiate real progress in a difficult field of clinical medicine.

FURTHER EVIDENCE OF THE DISTRIBUTION OF INTESTINAL AMEBAS

Amebic dysentery became recognized as a distinct disease entity as the result of the investigations of Councilman and Lafleur in the United States in 1891. For many years it was relegated to the province of tropical medicine, because of the conspicuous incidence of intestinal amebiasis in the warmer climates. Nevertheless, in their Human Protozoology, published ten years ago, Hegner and Taliaferro[1] remarked that infestation with Endamoeba histolytica, the parasite of amebic dysentery, can no longer be considered tropical but is world wide in distribution. In fact, we can sum up the geographic distribution of all the entozoic amebas of man, they add, by saying that they all occur, in different percentages in each species, wherever man occurs. In discussing the problem of amebiasis, Craig[2] noted the probability that more than 5 per cent of the people of the United States harbor Endamoeba histolytica; and it is not unlikely that the incidence in the more southerly states is even higher. The discovery of many cases of amebic disease as well as carriers in Chicago last fall and the attendant publicity served to focus attention on a much neglected menace to health.

In such situations, to be forewarned is to be forearmed. A survey[3] recently made at the University of Pennsylvania on more than a thousand college freshmen showed from the examination of a single stool per person that 4.1 per cent of these students harbored Endamoeba histolytica. Repeated stool examinations probably would have shown a still higher incidence. Most of these young persons came from homes in Pennsylvania or New Jersey, and few had traveled extensively either in the United States or abroad. It is likely that these students became infested before coming to college, so that the incidence found indicates the presence of the parasite in these districts.

Obviously, most of the students harboring Endamoeba histolytica were "carriers." As the Philadelphia investigators point out, just why some persons when infested with this ameba become ill, while others do not, is not exactly known. It seems probable, however, that some individuals have a greater natural resistance to this parasite than others and also that some strains of the parasite may be more virulent than others. Wenrich, Stabler and Arnett offer some salient advice that is deserving of repetition. As amebic dysentery is considered to be rare by many medical men, the true nature of such cases is likely to be overlooked. Amebic disease is admittedly difficult to differentiate from other disturbances of the digestive tract and normally requires the finding of the amebas themselves in the feces or in the tissues obtained at necropsy. With four other amebas resident in the human bowel, proper diagnosis requires special training in the technic of examination and in the differentiation of these different types of parasites. Education on the part of the public as well as of health officials is eminently desirable. Experience has taught that early recognition of the causes of disease is one of the most effective helps not only in treatment but also in the framing of effective prophylactic measures.

Current Comment

BONE DEVELOPMENT IN SUNNY PUERTO RICO

Occasionally one hears an ironical comment on the importance of sunlight for human well being. This is not surprising in view of the confusion and uncertainty that still exist with respect to the medical or physiologic aspects of climatology. Adverse criticism, furthermore, is a justifiable and almost inevitable consequence of the exploitation of sunlight and its artificial substitutes in the form of apparatus designed to produce special types of radiant energy. There has been all too much quackery and pseudoscience about solar irradiation. Nevertheless, one could scarcely expect to find a more convincing demonstration of what sunshine actually can accomplish than is afforded by the data of Eliot and Jackson[1] on the bone development of infants and young children in Puerto Rico. Rickets is undoubtedly a rare disease in that land of intense sunlight. The study included nearly 600 Puerto Rican children from 1 to 34 months of age. The observations were made in a thoroughgoing manner and included roentgeno-

9. Scupham, G. W., and Johnson, C. A.: Peripheral Vascular Phenomena: III. The Peripheral Pulse Volume in Occlusive Arterial Diseases, Arch. Int. Med. **52**: 877 (Dec.) 1933.

1. Hegner, R. W., and Taliaferro, W. H.: Human Protozoology, New York, Macmillan Company, 1924.

2. Craig, C. F.: The Amebiasis Problem, J. A. M. A. **98**: 1615 (May 7) 1932.

3. Wenrich, D. H.; Stabler, R. M., and Arnett, J. H.: The Incidence of the Disease Producing Ameba (Endamoeba Histolytica) in 1,060 College Freshmen and Its Significance, Science **79**: 143 (Feb. 9) 1934.

1. Eliot, Martha M., and Jackson, Edith B.: Bone Development of Infants and Young Children in Puerto Rico, Am. J. Dis. Child. **46**: 1237 (Dec.) 1933.

graphic appearance of the bones and analyses of the blood. Only five cases of rickets were detected, an incidence of less than 1 per cent. Even some of these exceptions were readily explained. One was a case of frank severe rickets, that of a 7 months old infant who had lived all his life in a stone cellar lighted only with electric light, and another, a case of healed rickets that had occurred when the child lived in New York City. The Puerto Rico climate is characterized not only by the intense character of the sunlight but also by its uniform availability throughout the year. Although the average number of hours of sunlight during a year in San Juan does not greatly exceed the average number in some Northern cities, its availability is much greater. In San Juan the daily average of hours of sunlight varies relatively little from month to month (from 6.8 in December to 8.4 in August), and the uniformly warm climate allows the hours of sunlight to be constantly available to children throughout the year. In the northern part of the United States, on the other hand, not only is there a considerable variation from month to month in the daily average of hours of sunlight, but the long cold season reduces to a minimum the availability of what sunlight there is for at least five months in the year. It should also be remembered, as has been shown by Tisdall and Brown, that the intensity of the sunlight probably is relatively great and varies little from season to season at the latitude of Puerto Rico (18 degrees), whereas in northern American cities (around 40 degrees) the intensity, without much doubt, is considerably lower during the winter months. Eliot and Jackson state that if one takes into consideration the uniformly warm climate, the intensity of the sunlight and its availability for many hours daily throughout the year and the outdoor habits of the people, the presumption that the children of Puerto Rico should be free from rickets would seem to be justified.

THE FAT OF THE FECES

The feces always contain a measurable amount of "fat" or lipid material, regardless of whether any fat has been ingested. During fasting the "fat" fraction of the excreta from the alimentary tract may amount to one third of their dry weight. Formerly the fecal fat was attributed to two sources: food fat that had failed to be digested and absorbed, and fat from the bacteria and cellular débris of the digestive canal. More recently the evidence has accumulated to indicate that a certain amount of fat is actually excreted through the intestine independent of the other factors mentioned. This general view is championed by Bloor and his school. They cite the fact that the fecal lipids of animals are excreted in constant amount and are of a uniform type, regardless of the quantity of fat in the diet or its degree of unsaturation (iodine number). Because of their similarity in composition, Sperry [1] believes that the fecal lipids represent a secretion or excretion from the blood. This investigator showed also that the bile,[2] epithelial desquamation [3] and probably bacteria [4] are not the sole source of fecal lipids. It is known that sterile meconium obtained from newborn infants shows the presence of fatty material. At the Royal Victoria Hospital in Montreal, Krakower [5] has compared the composition of the fecal lipids in a group of normal persons who received test diets containing small and large amounts respectively of fat. Despite the wide variations represented by such extremes as 8 and 128 Gm. of fat daily, the excreted lipids were uniform in composition, as judged by their iodine numbers, and thus differed from the fats fed in which the values varied from 8.2 to 125.8. The independence of the stool lipids was further shown by the comparatively slight relationship in the amounts of fat in the diet and those recovered in the feces. It is hard, therefore, to avoid Krakower's conclusion that fecal lipids do not represent a residue of fat in the diet, when given in moderate amounts, but may be in part excretions of the blood into the gastro-intestinal tract. These assumptions need to be kept in mind in the clinical examination of the stools.

1. Sperry, W. M.: J. Biol. Chem. **68**: 357 (May) 1926.
2. Sperry, W. M.: J. Biol. Chem. **71**: 351 (Jan.) 1927.
3. Sperry, W. M.: J. Biol. Chem. **92**: xxxiii (June) 1931.
4. Sperry, W. M.: J. Biol. Chem. **81**: 299 (Feb.) 1929.
5. Krakower, Abram: Fecal "Fat" and Its Relation to Fat in the Diet, Am. J. Physiol. **107**: 49 (Jan.) 1934.

Medical Economics

NEW FORMS OF MEDICAL PRACTICE

Some California Health Insurance Rackets

In a series of articles in THE JOURNAL which began in October 1932, the Bureau of Medical Economics emphasized certain dangers and abuses likely to be associated with attempts to apply the insurance principle to medical care.

Some of the dangers then suggested were the following:

1. Profit making plans in this field could easily degenerate into fraudulent "rackets."

2. Practically all the plans lacked provisions to insure financial security. There was seldom any provision for reserves such as experience has shown are a first essential of any insurance plan.

3. Owing to the lack of sound financial provisions, the subscribers to such plans had no security that they would receive anything in return for payment collected.

4. The presence of numerous such schemes operating in the same field would inevitably create commercial competition. The easiest way to meet such competition is to reduce the quality of the service. To do this is comparatively safe, because the customer cannot judge that quality and nearly every scheme resisted any suggestion for professional supervision of the quality of the service. Such supervision has been long recognized as the only method of maintaining high standards in hospital and educational institutions, both of which are less affected by competition and may be supposed to have greater incentives to maintain proper standards.

5. It was predicted that, although such plans were always proposed as a method of reducing the costs of medical care, their first effect was to take a large share of the subscribers' money for lay management and especially for solicitation of members. Experience in other countries had shown that, in such a conflict over the patient's dollar, the share going for the payment of medical service was continually reduced to increase the proportion taken for those to whom the scheme was only a method of securing income.

6. Emphasis was placed on the historically established fact that all solicitation for medical service inevitably led to a deterioration of almost every phase of that service.

7. Such schemes, looking on the physician as a mere instrument in a commercial transaction, always lead to such unjust

and excessive exploitation of the physician as to weaken or destroy professional standards.

When these articles were published, promoters and defenders of these plans criticized the Bureau of Medical Economics sharply for its conclusions. They charged that the Bureau had drawn on its imagination in order to build objections. The truth is that every such objection was based on examination of existing systems in which these evils had already begun to develop.

The Report of the Committee on the Costs of Medical Care seems to have been instrumental in starting a flood of such schemes.

In the few months that have elapsed, there has been an opportunity for all these evils to develop. They have developed faster and in more vicious directions than the Bureau had predicted.

California was hailed by the defenders of these new forms of medical practice as pointing the way to be followed by the rest of the country. This state became the happy hunting ground of the medical promoter. Now the Alameda County grand jury has indicted nineteen men in connection with the "health insurance racket," which, as the San Francisco *Chronicle* says, has victimized hundreds of persons throughout the state. Three of those indicted are now either in jail or out on bonds of from $5,000 to $20,000, while officers are seeking to find the remainder in order to arrest them. The *Chronicle* continues: "The first indictment contained two counts, one of conspiracy to commit petty theft, the other conspiracy to violate the insurance laws. The second indictment charges conspiracy to make false promises. All three offenses are felonies, each punishable by two years' imprisonment or a $5,000 fine, or both."

This investigation was largely inspired by Dr. Charles B. Pinkham, secretary-treasurer of the Board of Medical Examiners for the State of California. He has been investigating the operations of such organizations for some time. He discovered that fourteen of these so-called hospital associations were connected in one way or another with a single room in the Phelan Building, San Francisco.

Assistant District Attorney Leslie G. Gillen was quoted by the San Francisco *Examiner* of April 30, 1932, as saying after the investigation that "between 4,000 and 5,000 persons are making payments of from $1 to $5 a month into health and hospital organizations that are either suspended from business or do not exist as far as the state of California knows."

It is significant that it took nearly a year after these facts had become known before the present grand jury action was secured. This would seem to indicate that these swindling associations had become sufficiently powerful to wield political influence.

In a list compiled by Dr. Pinkham, Jan. 29, 1934, are found the names of 143 such associations. The investigation showed that thirty-seven of these used two or more names. While this is not a proof of fraudulent intent, it is at least a suspicious fact that a corporation or business firm finds it necessary to change its name one or more times within the short period the organization has been in existence. Something of the character of the service being given by those that even pretend to meet their obligations is shown by some of the facts unearthed during this investigation.

Of one association, it is said, it is reported that "the office girl prescribes for members seeking medical service; that Drs. ——— and ——— have prescriptions already compounded and the office girl gives them to policyholders."

The complaints of failure to provide medical service had been investigated by the grand jury in two other cases.

The representative of another medical service concern had been arrested for violation of the medical act.

One subscriber complained that after paying $4.50 a month for three years he was refused medical treatment for his baby.

The attorney general said about one contract, "I am of the opinion that the issuance thereof not only violates the law relating to insurance companies but the Medical Practice Act, as well as the State Bar Act."

Another organization that contracted to furnish all forms of medical service reported a staff of two physicians, four dentists, four chiropractors and one chiropodist.

A view of the character of the service furnished, as revealed by the state board of medical examiners, is given in the report of the San Francisco *Chronicle* for Feb. 21, 1934:

> According to Inspector J. W. Davidson of the board, the doctor sent to see her by the health association said the intestinal ailment of which she complained was "imaginary." Within a week she was dead in the county hospital, and of that ailment. The company did not pay.
>
> Inspector Davidson tells also of the company that stipulated it would deliver a baby free for any couple that had held their policy for two years. One young couple thought they had qualified. They waited two years and then prepared for the baby.
>
> When the baby was about to arrive, they notified the company, asking for the promised service. Did they get a baby free? They did not. The company called attention that they had once been eleven days late in payment of a premium and that, in accordance with section Q, line 6, of the contract, they would have to wait two years from the time the delinquent premium was paid.
>
> "In other words," said Davidson, "they would have to postpone the baby."

The *Underwriters' Report*, a weekly insurance paper of San Francisco, in its issue of Feb. 15, 1934, describes the financial condition of one such company as follows: ". . . special agents of the State Medical Board raided the offices of the United Travelers Underwriters in San Francisco two weeks ago, at which time they confiscated two thick files of complaints from irate and 'gypped' policyholders and learned that the 'insurance company' had exactly $140 in liquid assets against $70,000 of 'insurance' in force. The raiding officers were unable to serve their warrants because the 'John Does' had fled. They were arrested later in Reno."

Another scheme distributed paid-up memberships to be given out by commercial houses in Long Beach which entitled the holder to one year of benefits.

Harry Kramer, who has recently been indicted and whose bond was fixed at $20,000, was operating at least seven different organizations.

There is a long list of physicians who have permitted their names to be used by such organizations and who, in some cases, undoubtedly have destroyed reputations built up through years of practice.

As a result of this sudden growth of medical insurance schemes in California, many thousands of people have been defrauded of money which they thought they were paying for medical service. They have probably been deprived of medical service except so far as physicians and existing relief organizations have come to their assistance. If the money thus collected, and even worse than wasted, is to be counted as a part of the "cost of medical care," it is quite evident that these organizations, so far from having reduced that cost, have greatly increased it.

It would be hard to find a better illustration of the evils that inevitably follow the introduction of lay control, the profit motive and solicitation into the field of medical service.

Association News

MEDICAL BROADCASTS

National Broadcasting Company

The American Medical Association broadcasts on a coast-to-coast network each Monday afternoon from 4 to 4:15, Central standard time (5 o'clock Eastern standard time, 3 o'clock Mountain standard time, and 2 o'clock, Pacific standard time).

The next three broadcasts will be as follows:

March 26. Why Pasteurize? W. W. Bauer, M.D.
April 2. What Is Health? W. W. Bauer, M.D.
April 9. Peculiar Accidents, W. W. Bauer, M.D.

Columbia Broadcasting System

The Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central standard time. The next three broadcasts will be as follows:

March 29. Flowers That Bloom in the Spring, W. W. Bauer, M.D.
April 5. "Smog," W. W. Bauer, M.D.
April 12. Pretty Polly, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Outbreak of Botulism.—Five members of a Japanese family in Santa Clara County died, recently, of botulism contracted through an unusual source, according to the state health department. All members of the family partook of a meal, Dec. 28, 1933, at which a soy bean preparation was consumed. This preparation had been made December 26 and cooked four hours on the stove, after which it was buried in a cloth sack and placed in a heated pit in the ground for two days to allow fermentation. Laboratory examination of the mixture proved positive for botulism.

Dr. Ely Retires.—Dr. Leonard W. Ely, since 1913 professor of surgery, Stanford University School of Medicine, will retire from the faculty at the end of the present academic year. Dr. Ely was born in Brooklyn in 1868 and graduated in medicine at Columbia University College of Physicians and Surgeons. He engaged in private practice in New York and also in Denver and is the author of several volumes on diseases of the bones and on tuberculosis. To fill the vacancy in the department, Dr. Donald E. King, formerly of Ann Arbor, has been appointed an associate professor in orthopedics. He will assume his duties September 1.

Society News.—Dr. Arthur Elmer Belt, among others, spoke before the Los Angeles Surgical Society, March 9, on "Electrical Cutting—Its Remote Effect on Tissue, with Particular Reference to Electrosurgical Resection of the Prostate." ——At a meeting of the San Francisco Pathological Society, March 5, the speakers included Dr. James B. McNaught on "Rupture of the Pulmonary Artery."——At a meeting of the Clinical and Pathological Society of Los Angeles, February 22, speakers included Drs. Henry Snure and George D. Maner on "Carcinoma of the Stomach with Unusual Bone Metastases." ——Dr. Eberle Kost Shelton, Santa Barbara, addressed the Hollywood Academy of Medicine, February 15, on "The New Growth Hormone."——Speakers before the Society for Neurology and Psychiatry, February 21, in Los Angeles, were Drs. Nelson P. Anderson on "Adenoma Sebaceum with Tuberous Sclerosis"; Verne R. Mason, "Exophthalmos," and Cyril B. Courville, "Mortality of Injuries to the Head."——Dr. Harry M. Weber, Rochester, Minn., spoke on "Roentgen Manifestations of Tumefactive Processes in the Large Intestine and Their Differential Diagnosis" before the San Diego Academy of Medicine, February 21.

COLORADO

Society News.—Dr. Cuthbert Powell, Denver, addressed the Boulder County Medical Society, March 8, on "Value of X-Ray Diagnosis in Obstetrics." —— Severance Burrage, Dr.P.H., spoke before the Medical Society of the City and County of Denver, March 6; his subject was "Microbial Fingerprints—Their Relation to Respiratory Disease." The Rocky Mountain Pediatric Society sponsored the program of the society, February 6; Dr. Henry F. Helmholz, Rochester, Minn., was the guest speaker, on "Pyelitis in Children."

DISTRICT OF COLUMBIA

Medical Bills in Congress.—*Changes in Status:* S. 2006 has been reported to the House without amendment (H. Rept. 900). The bill authorizes the Commission on Licensure of the District of Columbia to issue a license to Della D. Ledendecker to practice chiropractic in the District. *Bills Introduced:* S. 3045, introduced by Senator Davis, Pennsylvania, proposes to provide for needy blind persons of the District of Columbia.

FLORIDA

Business Bureau Organized.—The Lake County Physicians Business Bureau, sponsored by the county medical society, has been organized to collect and adjust accounts for its members and establish and maintain friendly relations between members and their patients.

Personal.—Dr. Leonidas M. Anderson, Lake City, was recently presented with the medal awarded annually by the local chapter of the American Legion "for distinguished service and citizenship based upon peace time service to the community." Dr. Anderson is now president of the Columbia County Medical Society and a past president of the Florida Medical Association.——Dr. Thomas S. Kennedy, sanitary officer of the West Florida district, has been appointed assistant state director of rural sanitation.

Society News.—The Florida State Board of Health conducted a tuberculosis clinic in Fort Pierce, February 16; Dr. William A. Claxton was in charge.—— Dr. Walter B. Lancaster, Boston, addressed the Tampa Eye, Ear, Nose and Throat Society, February 14, on "Certain Disturbances of Binocular Vision and Their Treatment" and "The Ultracapsular Method of Cataract Extraction."——Dr. Henry E. Palmer, Tallahassee, was elected president of the Association of Seaboard Air Line Railway Surgeons, recently.——At a meeting of the De Soto-Hardee-Highlands County Medical Society in Bowling Green, January 9, Dr. James R. Boulware, Jr., Lakeland, discussed "The Use of Phenobarbital in Infancy." ——A symposium on indigestion, or dyspepsia, constituted the program of the Duval County Medical Society at its meeting, February 6; speakers were Drs. Ernest B. Milam, Clayton E. Royce, Harry A. Peyton, Herrman H. Harris and Harry B. McEuen.——Dr. James O. Wallace, Pittsburgh, spoke before the Dade County Medical Society, February 2, on "Derangements of the Knee Joint," and Max Dobrin, Miami, "Diabetes Mellitus in Relation to the Pituitary Gland."

GEORGIA

Dr. Moss Resigns as Dean.—Dr. William L. Moss has resigned as dean of the University of Georgia Medical Department, Augusta, it has been announced. He was named to the position in July 1931. Dr. Moss was graduated from Johns Hopkins University School of Medicine in 1905 and has been a member of the medical faculties of Harvard and Yale universities. In 1916 he was in charge of a Harvard expedition to Peru and in 1920 was a member of a Harvard commission to the Dominican Republic (THE JOURNAL, June 27, 1931, p. 2216). Dr. G. Lombard Kelly, professor of anatomy, was named vice dean in charge of administration, it was stated. Dr. Moss has also resigned as professor of preventive medicine, it was reported.

Society News.—At a meeting of the Muscogee County Medical Society, February 8, Drs. Clifford A. Peacock spoke on "Diseases of the Eye in Relation to Systemic Disease"; Francis B. Blackmar, "Edema of the Optic Disk," and John B. Thompson, Jr., "Diseases of the Ear and Mastoid in Relation to Systemic Disease."——Dr. William A. Selman presented a paper on "Carcinoma of the Colon" before the Fulton County Medical Society, Atlanta, February 15.——At a meeting of the Atlanta Neurological Society, February 22, Dr. Ross M. Chapman, Towson, Md., spoke on "Mental Hygiene and the Public Health," and Dr. S. Bernard Wortis, New York, "The Convulsive State."——At a meeting of the Ware County Medical Society, February 7, Dr. Daniel M. Bradley, Waycross, gave a paper on "Treatment of Menstrual Disturbances." ——A joint paper on "Infantile Paralysis—From Medical and Orthopedic Standpoints, with Particular Reference to Cases Treated in Macon" was presented before the Macon Medical Society, February 6, by Drs. William C. Boswell and John I. Hall, both of Macon.

ILLINOIS

Dr. Starkel Honored.—Friends of Dr. Charles H. Starkel, Belleville, gave a dinner in his honor, February 14, at the University Club in St. Louis, to observe his completion of fifty years in the practice of medicine. Dr. Starkel, who is 72 years old, graduated from Rush Medical College in 1884. He was health commissioner of Belleville for many years.

Society News.—Dr. Ko K. Chen, director of pharmacologic research, Lilly Research Laboratories, Indianapolis, addressed the Peoria City Medical Society, March 6; on "Development of Ephedrine," "Newer Antidotes for Strychnine and Cyanide Poisoning" and "Toad Poisons." —— The St. Clair County Medical Society was addressed in East St. Louis, March 1, by Dr. Charles H. Neilson, St. Louis, on "The Weather, Its Influence on Health and Disease," and in Belleville, March 7, by Dr. Cleaves Bennett, Champaign, on "Care of Indigent Sick as Done by Adams, Champaign, Cole and Macon County Medical Societies."——Speakers before the Adams County Medical Society at Quincy, March 12, were Drs. Philip H. Kreuscher, Chicago, and Nathaniel G. Alcock, Iowa City, on "Backache" and "Prostatic Resection," respectively.——Dr. Joseph Marcovitch, Jacksonville, spoke before the Morgan County Medical Society, February 8, on "Symptoms and Clinical Findings in Postepidemic Encephalitis," and Dr. Warner H. Newcomb, Jacksonville, "Treatment of Cardiac Decompensation."

Chicago

Program on Poliomyelitis.—"Orthopedic Care of Poliomyelitis" will be the subject presented by Dr. Michael Hoke, surgeon-in-chief, Georgia Warm Springs Foundation, Warm Springs, Ga., before the Chicago Medical Society, March 28, in the Medical and Dental Arts Building. The society devoted its meeting, March 21, to a discussion of milk. Speakers were Paul Krueger, assistant director, bureau of dairy products, Chicago Board of Health; A. M. Krahl, director, public relations, Pure Milk Association; M. O. Maughn, executive secretary, The Milk Council, Inc.; Dr. Roy R. Ferguson, secretary, Chicago Medical Society Milk Commission, and Mr. Raymond Hertwig, secretary, Committee on Foods of the American Medical Association. H. L. Russell, Ph.D., director, Wisconsin Alumni Research Foundation, discussed "Irradiated Vitamin D Milk."

INDIANA

Dinner to Dr. Wishard.—The senior class of Indiana University School of Medicine held a dinner in honor of Dr. William N. Wishard, February 28, in celebration of his sixtieth anniversary as a graduate of medicine. Dr. Wishard is professor of genito-urinary surgery at the medical school and a former superintendent of the Indianapolis City Hospital. His father, Dr. William H. Wishard, made the first formal effort to obtain a general state hospital by resolution introduced in the session of the Indiana State Medical Association in 1868, it is reported. A son, Dr. William N. Wishard, Jr., is associated in practice with him.

Society News.—The Indianapolis Medical Society held a joint session with the midwestern section of the American Congress of Physical Therapy, March 13; speakers were Drs. Max Thorek, Chicago, on "An Electrosurgical Method for Obliterating the Gallbladder," and John Stanley Coulter, Chicago, "Physical Therapy in the Rehabilitation of the Disabled." The society was addressed, March 20, by Dr. Lowell T. Coggeshall, Chicago, on "Diagnosis and Treatment of Lobar Pneumonia." Speakers before the society, February 20, were Drs. John W. Carmack, Indianapolis, and Ernest O. Asher, New Augusta, on "Suppuration in the Petrous Portion of the Temporal Bone" and "Bedside Observations on Prognosis," respectively. The society was addressed, February 27, among others, by Dr. Carl Habich on "Gonorrhea in the Female."

IOWA

Society News.—Dr. Oscar R. Prettyman, Manson, discussed urinalysis before the Calhoun County Medical Society in Rockwell City, March 13.——At a meeting of the Chickasaw County Medical Society in New Hampton, February 2, Dr. Erwin von Graff, Iowa City, spoke on "Dangers of Stump Cancer after Subtotal Hysterectomy."——A symposium on the upper respiratory tract constituted the meeting of the Hardin County Medical Society; the speakers were Drs. Ralph H. Parker and George A. May, both of Des Moines.——Dr. Paul B. Magnuson, Chicago, discussed the surgical treatment of arthritis before the Scott County Medical Society in Davenport, February 6.——At a meeting of the Tama County Medical Society in Dysart, February 23, Drs. Thomas F. Hersch and Ernest G. Kieck, Cedar Rapids, spoke on common colds and their prevention and common skin diseases, respectively.——The Wapello County Medical Society will be addressed, April 3, by Dr. William E. Olson, Ottumwa, on "Correlation of Simple Laboratory Procedures with Clinical Findings as an Aid to Diagnosis." Dr. Myron G. Means, Ottumwa, spoke before the society, March 20, on "Catarrhal Jaundice."——Recent speakers before the Wayne County Medical Society included Dr. Robert O. Hughes, Ottumwa, on "Diagnosis of Acute Diseases in Children."

KANSAS

Credit Bureau Established.—Members of the Sedgwick County Medical Society are participating in the recently established Wichita Medical Credit Bureau. In designating the accounts to be listed with the bureau, the committee on medical economics of the society demands that individual members shall not use their own judgment as to what bills are delinquent. All accounts over ninety days old must be listed with the bureau. Personal information on file about the patient will be available to participating physicians.

Society News.—Speakers before the Clay County Medical Society at Clay Center, February 14, were Drs. George W. Bale and Franklin R. Croson, both of Clay Center, on trichomonas vaginalis and acute intestinal obstruction, respectively.——At a meeting of the Shawnee County Medical Society, February 5, Dr. Arthur E. Hertzler, Halstead, discussed the present trend in treatment of goiter.——Speakers before the Wyandotte County Medical Society, March 20, were Drs. Charles Omer West and Maurice A. Walker on "Allergy" and "Leukocytosis in Carcinoma of the Stomach." Dr. Harold V. Holter discussed "Lacerations at Childbirth and Their Treatment" before the society, March 6, and Dr. Donald N. Medearis, "Vomiting in Infants." A joint meeting of the society and the Jackson County Medical Society, March 13, was addressed by Dr. W. Lee Hart, Medical Corps, U. S. Army, on "Relationship of the Army to Medicine"; Dr. Reuben H. Hunt, Medical Corps, U. S. Navy, "Naval Medical Service in Our Insular Possessions," and Dr. Otto Jason Dixon, "Ear, Nose and Throat Complications in Exanthemata."

KENTUCKY

Bill Passed.—H. 662, the uniform narcotic drug act, has passed the house and senate.

Personal.—Dr. Ampias W. Davis, Madisonville, has been appointed a member of the state board of health to succeed the late Dr. Ben B. Keys, Murray.——Dr. Oscar M. Crenshaw, Lebanon, recently received a bequest of $1,000 from a patient "in appreciation for medical services."

Hospital News.—St. Anthony's Hospital Association gave a dinner, January 27, in honor of Dr. William Seaman Bainbridge, New York, who described the work of a committee that is collecting and coordinating the medical and surgical experiences of the World War. Dr. Argus D. Willmoth presided at the dinner and addresses were made by Drs. George A. Hendon, Ira N. Kerns, Curran Pope and John R. Wathen, all of Louisville.

MASSACHUSETTS

Bill Introduced.—S. 257 proposes to regulate the sale of methyl alcohol, and certain preparations containing alcohol.

Health at Lowell.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended March 10, indicate that the highest mortality rate (24.4) appears for Lowell and that the rate for the group of cities as a whole was 13.2. The mortality rate for Lowell for the corresponding period last year was 13, and the rate for the group of cities, 11.9. The annual rate for eighty-six cities for the ten weeks of 1934 was 12.7, as against a rate of 12.4 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

MINNESOTA

Society News.—Dr. Frank S. McKinney, Minneapolis, addressed the Washington County Medical Society at Stillwater, recently, on "Modern Treatment of Hernias and Varicose Veins."——Speakers before the Minnesota Academy of Medicine, March 14, in Minneapolis, were Drs. Henry W. Cook and Frederic E. B. Foley on mortality and morbidity trends and operative division of the horseshoe kidney, respectively. Dr. William F. Braasch, Rochester, presented an unusual form of renal polycystic disease.

Dinner to Dr. Schwyzer.—Dr. Arnold Schwyzer, St. Paul, was guest of honor at a dinner, February 12, sponsored by the sisters of St. Joseph's Hospital to commemorate his forty-third year at the hospital and his seventieth birthday. He was presented with an illuminated framed parchment by Dr. Samuel C. Schmitt on behalf of the staff. Dr. John A. Lepak was toastmaster, and Dr. William J. Mayo, Rochester, the principal speaker on "Teacher, Physician and Surgeon." Other speakers included Drs. Carl C. Chatterton, who delivered greetings from the hospital; Gustav Schwyzer, "My Brother and Pre-American Days in Switzerland"; John L. Rothrock, "High Social and Civic Recognition"; Justus Ohage, Sr., "Reminiscences," and William C. Carroll, "The Ever Guiding Hand in the Hospital." Dr. George A. Geist, who also spoke, composed two musical numbers in honor of Dr. Schwyzer.

MISSISSIPPI

Bill Passed.—S. 316, proposing to amend the medical practice act, has passed the senate in amended form. As introduced, the bill proposed (1) to require midwives to procure from the state board of health annually permits signed by the secretary of the board and by the county health officers of the counties in which such midwives respectively reside; (2) to redefine

the practice of medicine, and (3) to authorize the state board of health to revoke a license to practice medicine or a license to practice osteopathy, if the licentiate (*a*) procures or aids or abets in procuring a criminal abortion, (*b*) is habitually intemperate in the use of intoxicating liquor or narcotic drugs or violates the federal narcotic laws, (*c*) obtains any fee on the assurance that a manifestly incurable disease can be permanently cured, (*d*) procures by fraud or deceit a license to practice, (*e*) is convicted of any charge resulting in a penitentiary sentence, or (*f*) is convicted before a court for crime in the course of professional practice. The board is authorized to reinstate any license that it has revoked.

Bills Introduced.—S. 469 proposes to authorize the organization of corporations to engage in the business of writing contracts providing for hospital services in cases of illness or accident. H. 553 proposes to authorize the Board of Supervisors of Harrison County to make a general levy, not to exceed one half of one mill, on all the taxable property in the county, to provide funds for charitable hospital purposes. H. 851 proposes to regulate the practice of podiatry. Podiatry is declared to mean "the diagnosis and medical, mechanical, electrical, and surgical treatment of the minor ailments of the human foot, such as corns, calluses, warts, ingrowing and abnormal nails, bunions, and similar conditions." Podiatrists are to be permitted to use "such mechanical appliances as may be deemed necessary for the relief or cure of such ailments of the feet, except partial or complete amputation of the foot or toes, surgical correction of the various forms of talipes (clubfoot) and other deformities of muscles, tendons, bones, and nerves requiring cutting operations, or the use of anesthetics other than local anesthetics related to the part affected used to prevent operative or mechanical pain, provided that massage of the leg in connection with such treatments is not prohibited. Diseases and conditions of the feet produced by kidney, heart, and other systemic diseases are not to be treated by persons licensed under this act." The bill is not to apply to licensed physicians.

MISSOURI

Hospital for Negroes.—Construction on the Homer G. Phillips Hospital for Colored, St. Louis, will be resumed through the recent transfer of $1,500,000 to a hospital fund from funds appropriated for other purposes. Much needed improvements to other municipal institutions will also be carried out as the result of this transfer. The hospital will have 600 beds when completed, and cost $2,500,000. It is expected to be ready for occupancy about July 1935. The work begun on the structure some time ago was stopped when funds were exhausted.

Society News.—The Buchanan County Medical Society was addressed, February 7, by Dr. Albert H. Muench, St. Joseph, on sterility.——At a meeting of the Cape Girardeau County Medical Society, February 12, Drs. Hugh V. Ashley, Cape Girardeau, and Daniel G. Seibert, Jackson, spoke on placenta praevia and care of pregnancy in the home, respectively.——Dr. Frank B. Long, Sedalia, read a paper on pernicious anemia before the Pettis County Medical Society, February 19.——The medical societies of Howell, Oregon, Texas, Wright and Douglas counties recently merged, forming the South Central Counties Medical Society. Meetings are to be held every two months. At this meeting, the Carter-Shannon County Medical Society was invited to become a part of the new organization. Dr. James C. B. Davis, Willow Springs, was named president, and Dr. Alfred C. Ames, Mountain Grove, secretary.——At a meeting of the St. Louis Medical Society, March 2, speakers included Drs. William Carl Stude on "Perforations of the Labia Minora"; Norman Tobias, "Extragenital Infection in Syphilis," and Frank L. Morse, "Treatment of Cancer with Pancreatic Extract."——Dr. Jacob William Beckmann will speak on "Encephalitis B" and discuss the St. Louis epidemic before the St. Louis Neuropsychiatric Society, April 2.——Dr. Charles A. Doan, Columbus, addressed the Kansas City Academy of Medicine, March 16, on "Clinical Implications of Experimental Hematology."

NEW YORK

University News.—It was stated in THE JOURNAL, March 3, page 705, that "Syracuse University College of Medicine has discontinued its department of obstetrics in order to concentrate all its work in Syracuse Memorial Hospital." This sentence should have read "Syracuse University College of Medicine has discontinued the department of obstetrics in its university owned hospital in order to concentrate all obstetric work in Syracuse Memorial Hospital."

Bills Introduced.—S. 1142 and A. 1742 proposes to make it unlawful for any business corporation or voluntary association to practice podiatry or to solicit by any method the practice of podiatry, for itself or for any licensed podiatrist. The practice of podiatry, or the advertisement thereof, by any person under any trade name or under any name or designation other than his own, is prohibited. No person, other than a licensed physician, is to be permitted to use in connection with his name the words or terms "foot-specialist, foot-correctionist, foot-expert, practopedist, podologist, or any words or terms of similar import." A. 1442 proposes to accord liens to charitable hospitals, and hospitals operated by counties, cities, towns or villages treating any person injured through the negligence of another on any rights of action, claims, counter claims or demands accruing to such person by reason of his injuries. A. 1567 proposes to amend the law prohibiting any unvaccinated child from entering a school in a city having a population of 50,000 or more, by providing that a child not vaccinated may be admitted on the recommendation of the board of health or such other board, commission or officers of such city having jurisdiction of the enforcement of the vaccination law.

New York City

Afternoon Lectures in Queens County.—Recent Friday afternoon lectures under the auspices of the Queens County Medical Society at the society's building in Forest Hills have been given by the following physicians:

Dr. Milton B. Rosenbluth, Modern Aspects of the Treatment of Pneumonia.
Dr. Pol N. Coryllos, Surgical Treatment of the After Effects of Pneumonia.
Dr. William Bierman, Office Electrosurgery.
Dr. Joseph E. Connery, Recent Advances in Hematology.

Discussion of Maternal Mortality.—A meeting to discuss the recent report on maternal mortality issued by the New York Academy of Medicine was held, March 7, under the joint auspices of the academy, the New York Obstetrical Society and the Medical Society of the County of New York. Drs. Harry Aranow, George L. Brodhead and George W. Kosmak presented various phases of the report, and the following participated in discussion: Drs. Arthur W. Bingham, East Orange, N. J.; Clifford B. Lull, Philadelphia; Thomas Parran, Jr., Albany, state health commissioner; John L. Rice, commissioner of health; Sigismund S. Goldwater, commissioner of hospitals, and Edward C. Podvin.

OHIO

Dr. Corrigan Appointed to Diplomatic Post.—Dr. Francis P. Corrigan, Cleveland, has been appointed American minister to El Salvador, Central America. Dr. Corrigan, a native of Cleveland and a graduate of Western Reserve University School of Medicine, has spent much time in Latin American countries. Recently he has been head of the surgical department of St. Alexis' Hospital, Cleveland.

Society News.—Dr. Robert C. Austin, Dayton, addressed the Darke County Medical Society, Greenville, February 16, on "Pitfalls in Abdominal Surgery."——Dr. John T. Quirk, Piqua, addressed the Miami County Medical Society, Troy, February 2, on "Diagnosis, Chemical Significance and Treatment of Premature Systoles."——Dr. William J. Dieckmann, Chicago, discussed "Toxemias of Pregnancy, Especially the Nonconvulsive Type," as a guest of the Marion County Academy of Medicine, February 6.——Drs. William E. Lower and William J. Engel, Cleveland, addressed the Mahoning County Medical Society, Youngstown, March 20, on "Endocrine Factors in Human Economy" and "Present Status of Intravesical Surgery," respectively.——Dr. Louis Feid, Jr., Cincinnati, addressed the Ross County Medical Society, February 1, on "Benign Uterine Hemorrhage and Its Treatment."——Dr. T. Wingate Todd, Cleveland, addressed the Cincinnati Academy of Medicine, March 5, on "The Physiology of Youth."

PENNSYLVANIA

Interns' Prize Contest.—Dr. George C. Schein, intern at South Side Hospital, Pittsburgh, won first prize in the annual interns' case report contest conducted by the Allegheny County Medical Society. Second and third prizes were won by Drs. Harry Lubow and Clyde B. Trees and honorable mention went to Drs. William N. Pitchford and George W. Hobson. All are graduates of the University of Pittsburgh College of Medicine except Dr. Trees, who is a graduate of Harvard University Medical School. Dr. Schein read his paper at the meeting of the society, March 20.

Philadelphia

Society News.—Drs. Nathaniel W. Winkelman and Alexander Silverstein, among others, addressed the Philadelphia Neurological Society, February 23, on "Unilateral Amyotrophy —Its Diagnostic Importance for Cerebral Localization."

Hospital News.—Dr. Abraham L. Rubenstone, medical director of Mount Sinai Hospital, will deliver the eighth of a series of public health talks sponsored by this hospital, April 25, on diabetes. Dr. Bernard Mann will speak on cancer, March 28.

Seminar on Gynecology and Obstetrics.—The fourth course of seminars under the auspices of the Philadelphia County Medical Society related to gynecology and obstetrics. Following is the program:

Drs. Charles Mazer and Franklin L. Payne, Our Present Knowledge of Sex Physiology and Clinical Applications of the Newer Knowledge in Female Endocrinology, respectively, March 2.
Drs. Philip F. Williams and Edward A. Schumann, Toxemias of Pregnancy and Hemorrhage, respectively, March 9.
Drs. Charles C. Norris and Robert A. Kimbrough, Jr., Significance of Menopausal Bleeding and Diagnosis and Treatment of Cervical Lesions, respectively, March 16.
Drs. Norris W. Vaux and Edmund B. Piper, Management of Anomalies of the Passages and Puerperal Infection, respectively, March 23.
Drs. Piper and Floyd E. Keene, round table conference, March 30.

RHODE ISLAND

Bills Introduced.—H. 736 proposes to amend the workmen's compensation act by providing compensation for disabilities resulting from certain occupational diseases named in the bill. H. 738 proposes to repeal existing laws relating to narcotic drugs and to enact a uniform narcotic drug act.

SOUTH CAROLINA

Bill Introduced.—S. 1562 provides that no physician, surgeon, osteopath, homeopath, chiropractor, registered nurse or any other person practicing medicine or any branch thereof shall, without first obtaining permission from the patient or his personal representative, be permitted to disclose any information acquired by him in attending a patient in a professional capacity.

VIRGINIA

Bill Passed.—H. 236, to amend the law making it now unlawful for any tobacco manufacturer to employ opium, either in the tobacco used or in the paper wrappers of cigarets, by forbidding also the like use of marihuana, loco weed or any other sedative, narcotic or hypnotic drug, or like chemical or substance, has passed the house and senate.

McGuire Lectures.—Dr. Frank Charles Mann, professor of pathology, surgery and experimental physiology, Mayo Foundation, Rochester, Minn., will deliver the McGuire Lectures at the Medical College of Virginia, Richmond, April 2-3. His subjects will be "Anatomy and Physiology of the Liver" and "Experimental Pathology of the Liver."

Society News.—The Smyth County Medical Society was organized at a meeting in Marion, February 14, with Dr. Avery B. Graybeal as president.——Drs. Harry Goldstein and Samuel Beverly Cary, among others, addressed the Roanoke Academy of Medicine, February 5, on "Bronchial Fistula with Spontaneous Recovery" and "Problems in Transurethral Surgery," respectively.

WASHINGTON

Society News.—Dr. Harold Brunn, San Francisco, addressed a special meeting of the King County Medical Society, Seattle, March 16, on diseases of the chest. Drs. Alexander H. Peacock, Seattle, and Kenneth K. Sherwood, Kirkland, addressed the society, February 19, on "Diverticula of the Bladder" and "Vaccine Treatment of Arthritis," respectively.——At a meeting of the Chelan County Medical Society, Wenatchee, January 4, speakers were Drs. Edward J. Barnett, Spokane, on "Nephritis in Infancy and Childhood" and "Thrombosis of Dural Venous Sinuses in Childhood" and Donald G. Corbett, Spokane, on "Transurethral Resection of Vesical Neck Obstruction."——The Kitsap County Medical Society was organized at Bremerton, January 3, with Dr. Henry A. Barner, Bremerton, as president.——Dr. Paul W. Sweet, Centralia, addressed the Lewis County Medical Society, Chehalis, January 9, on "Rectovaginal Fistula."——Dr. Herbert W. E. Johnson, Everett, presented a paper on "Malignant Conditions of the Genito-Urinary Tract" before the Snohomish County Medical Society, January 2.——Drs. Raymond E. Watkins and Henry H. Dixon, Portland, addressed the Walla Walla Valley Medical Society, Walla Walla, January 11, on "Carcinoma of the Female Genital Organs" and "Psychoneuroses in Relationship to General Medicine," respectively.

WISCONSIN

Officers of State Board of Health.—Dr. Stephen Cahana, Milwaukee, was elected president of the state board of health recently to succeed Dr. Gustav Windesheim, Kenosha, who had served six years. Dr. Mina B. Glasier, Bloomington, was named president-elect; Drs. Joseph Dean and Cornelius A. Harper, Madison, were reelected vice president and secretary, respectively.

Society News.—Dr. Alfred W. Adson, Rochester, Minn., addressed the Dane County Medical Society, Madison, January 9, on "Surgical Consideration of Brain Tumors" and Dr. Mabel G. Masten, Madison, discussed "Spontaneous Subarachnoid Hemorrhage."——Dr. Francis D. Murphy, Milwaukee, addressed the Fond du Lac County Medical Society, Fond du Lac, January 10, on coronary thrombosis.——Dr. Fremont A. Chandler, Chicago, gave an address on "Diseases of the Lumbar and Sacro-Iliac Regions from an Orthopedic Standpoint" before the Racine County Medical Society, Racine, January 18.

GENERAL

Negro Health Week.—The twentieth annual observance of Negro Health Week will be held throughout the country during the week beginning April 1, under the joint auspices of the National Negro Health Movement, the U. S. Public Health Service, state, city and county departments of health, and the national organizations interested in public health and in racial welfare. Days of the week are designated as Mobilization Day, Home Health Day, Community Sanitation Day, Special Campaign Day, Adults' Health Day, School Health Day and General Clean-Up Day. Sunday, April 8, will be Report and Follow-Up Day.

Society News.—Dr. Henry M. Fitzhugh, Baltimore, was installed as president of the Federation of State Medical Boards of the United States at a meeting, February 13. Dr. Irvin D. Metzger, Pittsburgh, was named president-elect; Dr. Roy B. Harrison, New Orleans, vice president, and Dr. Walter L. Bierring, Des Moines, was reelected secretary.——The annual meeting of the American Society for the Control of Cancer was held at the New York Academy of Medicine, March 2. Clarence C. Little, Sc.D., managing director, reviewed the work of the society; Dr. George H. Bigelow, Boston, described the program of cancer research of the Massachusetts state department of health; Dr. John C. A. Gerster, New York, work of the New York City Committee, and Dr. Joseph Colt Bloodgood, Baltimore, cancer research at Johns Hopkins University.

Medal for Discovery of "Heavy Water."—The Willard Gibbs Medal has been awarded to Harold C. Urey, Ph.D., associate professor of chemistry at Columbia University since 1929, for his discovery of "heavy water." In this compound, the hydrogen atom weighs twice as much as the hydrogen in ordinary water. The Willard Gibbs Medal is annually awarded by the Chicago section of the American Chemical Society to a scientist in any country "whose work in either pure or applied science has received world wide recognition." Founded in 1911, the medal is named for Josiah Willard Gibbs, American scientist, who was professor of mathematical physics at Yale from 1871 until 1903. Born in Walkerton, Ind., Dr. Urey, who is 41 years old, received his early education in Indiana. In 1917 he was graduated from the University of Montana with the degree of bachelor of science in zoology, and in 1923 he received the degree of doctor of philolosphy in chemistry from the University of California. He is the editor of the *Journal of Chemical Physics.*

A New Sixteen Million Dollar Foundation.—About $16,000,000 has been made available for philanthropic purposes through the recent creation of the Horace H. and Mark A. Rackham Fund, in Detroit. Dr. Mark S. Knapp, Flint, Mich., has been named director of medical research. He has been authorized to make a survey of possible fields of research in social sciences, character building, child welfare and health and medical research. On completing this study, which will be carried on in various research laboratories and universities throughout the country, his recommendations will be acted on by an advisory council. In addition, the desirability of "establishing a scientific medical and health research institute" is to be considered. The fund was created by the late Horace H. Rackham, a Detroit attorney, who died last June. His will provided that the residue of the estate after payment of bequests should create a fund to be used "for the good of humanity" and named a board of trustees to administer it. The trustees are Mrs. Mary A. Rackham, the widow, Bryson D. Horton, retired manufacturer, Judge Arthur J. Lacy and Attorney Clarence Wilcox, all of Detroit.

Medical Bills in Congress.—*Changes in Status:* S. 2800, the Copeland bill to prevent the manufacture, shipment and sale of adulterated or misbranded food, drink, drugs and cosmetics, and to prevent the false advertisement of such commodities, has been reported to the Senate, with amendments. As reported, the section of the bill has been eliminated which was designed to discourage the advertisement of drugs for the treatment of appendicitis, cancer, epilepsy, goiter, heart diseases, poliomyelitis, venereal diseases and certain other diseases. S. 2101 has passed the Senate, proposing to prohibit the mailing of unsolicited merchandise. S. 2526 has been reported to the Senate, proposing to pay an annuity to Frances Agramonte, the widow of Dr. Aristides Agramonte, a member of the yellow fever commission. H. R. 471 has been reported to the House (H. Rept. 931). The bill proposes to pay the Physicians and Surgeons Hospital (Limited), Glendale, Calif., for professional services rendered an enlisted man in the navy, who was injured while on leave. A claim for reimbursement for the services rendered was disallowed by the comptroller general because "enlisted men of the Navy are not entitled to medical treatment at public expense while on leave of absence or furlough." H. R. 5817 has been reported to the House (H. Rept. 941). This bill proposes to pay the Mary Black Clinic, Spartanburg, S. C., for professional services rendered a seaman of the United States Navy. While serving in the United States Navy, this seaman was operated on for an abscess of the abdomen and transferred to the Naval Hospital, Norfolk, Va., for treatment. While on leave from the hospital, he was stricken with an acute attack in the abdomen, and emergency treatment was rendered by the Mary Black Clinic. The claim for reimbursement for the emergency services rendered was disallowed by the comptroller general, who held that "enlisted men of the Navy are not entitled to medical treatment at public expense while on leave of absence or furlough." *Bills Introduced:* H. R. 8498, introduced by Delegate Dimond, Alaska, proposes to extend the facilities of the Public Health Service to seamen on government vessels not in the military or naval establishments. H. R. 8580, introduced by Representative Martin, Oregon, proposes to extend the benefits of the Economy Act, approved March 20, 1933, to all contract veterans who served in the foreign service under the jurisdiction of the Quartermaster General or the Surgeon General of the United States Army during the Spanish-American War, including the Philippine insurrection and the Chinese boxer rebellion. H. R. 8584, introduced by Representative Norton, New Jersey, proposes to furnish hospitalization and medical treatment at hospitals and relief stations of the United States Public Health Service to (*a*) officers of documented vessels of the United States who are holders of unexpired licenses of the United States Steamboat Inspection Service; (*b*) seamen who have served forty days or more on a documented vessel during the year preceding application for hospitalization or treatment; (*c*) seamen whose wages were diminished by reason of contributions made to the fund for the relief of sick and disabled seamen. H. R. 8666, introduced by Representative Mitchell, Tennessee, proposes to erect a veterans' hospital in middle Tennessee.

Government Services

Annual Report of Public Health Service

In 1932, the United States achieved the lowest general death rate (10.8) in its existence, according to the sixty-second annual report of the surgeon general of the public health service for the fiscal year ended June 30, 1933. The report, which covers the one hundred and thirty-fifth year of the service, points out that, whatever influence distressing economic conditions may have had on the health of the people of the United States generally, unfavorable results are not yet apparent from an examination of crude death rates, the reports of cases of communicable diseases, or deaths of infants. The smallpox death rate for 1932 was the lowest ever recorded by the service, four deaths in each ten million of population. Forty-six states reported 10,887 cases, as compared with 28,755 cases in 1931 and 46,560 cases in 1930. Only one out of each seventeen babies died before the expiration of its first year, giving a new low rate for infant mortality. New low death rates were also reached for tuberculosis (61.3 per hundred thousand of population), diphtheria (4.8) and typhoid (4.6). Preliminary reports showed the birth rate for the year to be 17.3 births per thousand of population, indicating a continued decline. No unusual widespread epidemics occurred, and the principal increases in the death rates were for cancer, heart disease and other so-called degenerative diseases, the death rates of which have been increasing for years. During the calendar year 1932, no case of plague occurred in the United States, but two plague-infested ground squirrels and four plague-infested rats were reported in California. In the Territory of Hawaii, six cases of plague with five deaths were reported. During 1932, 421 cases of Rocky Mountain spotted fever with seventy-six deaths were reported. Of this number, 304 cases with sixty-six deaths occurred in the Rocky Mountain and Pacific states, while 103 cases and ten deaths were reported in the Atlantic seaboard states. The greatest number of cases (100, with seventeen deaths) came from Montana. There was a decrease in the deaths (4,091) from pellagra. An increase in the prevalence of the disease was anticipated as the result of economic conditions, but this is not yet evident. For the year, 955 cases of typhus fever with fifty-three deaths were reported in the United States; of this number, Alabama, Georgia and Texas reported more than 80 per cent. Almost three times as many cases were reported in 1932 as in 1931, but some of this increase is attributed to better reporting of cases. Undulant fever was prevalent over the whole United States, with New York, Missouri and California reporting about one third of the total 1,502 cases. There were 945 cases of tularemia, with thirty-one deaths. Forty-seven states reported 386,597 cases of venereal disease, 234,647 of syphilis, 149,527 of gonorrhea and 2,423 of chancroid. A death rate of 30.1 per hundred thousand of population was reported for influenza, as compared with a previous rate of 25.8. At domestic ports, 398,574 alien passengers and 805,028 alien seamen were examined by medical officers, under the immigration laws. Of this number 13,942 passengers and 991 seamen were certified for various diseases and disabilities. The most important causes were trachoma, tuberculosis, feeblemindedness, insanity, syphilis and gonorrhea. No quarantinable disease was imported from foreign countries into the United States or its dependencies. One vessel arrived at the New Orleans quarantine station with typhus fever; one case of smallpox developed among passengers undergoing quarantine detention at the San Francisco quarantine station; one vessel arrived at Honolulu after having had one death from cholera on board, and one vessel with two cases of cholera arrived at the port of Manila. In each instance measures were taken to prevent the introduction of these diseases into United States territory. During the year, in the administration of quarantine regulations, 10,935 vessels, 555,726 passengers and 852,536 seamen were inspected. In addition, 4,186 airplanes arrived at airports of entry in the United States from foreign ports, requiring quarantine inspection; these planes carried 25,767 persons; of this number only 2,209 airplanes, carrying 20,396 persons, of whom 2,327 were aliens, were subjected to medical examination by medical officers. The remainder entered without the required medical examination, owing to permission for arrival at airports at which medical officers are not available. Because of spasmodic outbreaks of psittacosis, concentrated efforts were directed toward the enforcement of new regulations governing the importation of parrots. Trachoma eradication activities were continued in Georgia, Tennessee, Kentucky, Missouri and Texas. The disease is still a serious problem in the mountain regions of the South Central states. Financial and technical assistance was given to twenty-eight states to aid them in demonstrating the value of properly organized local health service. Studies were carried on in rheumatic heart disease, the early manifestations of leprosy, the cultivation of the bacilli of human and rat leprosy, epidemiology of plague, psittacosis, and child hygiene. Construction was begun on the superstructure of the first U. S. narcotic farm, near Lexington, Ky., March 25, 1933, and, in May, title was acquired to the property selected at the site for the second, at Fort Worth. The new administration building of the service in Washington, D. C., was occupied in May, 1933. The service received an appropriation of $12,127,983.50; of this, $10,655,131.46 was expended. This appropriation does not include an expenditure of $4,812.42 from the Conditional Gift Fund of the National Institute of Health.

CORRECTION

Castration of Criminals.—In the Berlin Letter, in THE JOURNAL, February 24, page 631, the words "sterilization" and "sterilized," lines 6 and 10, respectively, of the first paragraph on "The Castration of Criminals" should be changed to "castration" and "castrated," respectively.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 24, 1934.

The Serum Treatment of Lobar Pneumonia

Following the great amount of work on the serum treatment of pneumonia in the United States, the Medical Research Council has assisted an extensive inquiry in the hospitals of this country during the last three years. This was placed under the control of the therapeutics trial committee of the council. Typing was generally done on the fresh sputum and lung puncture was rarely used. Serums of types I and II were prepared and standardized according to the Felton units current in the United States. It was given intravenously as early as possible. If the infecting pneumococcus could be typed without many hours' delay the appropriate serum was given after this had been done. Otherwise a preliminary dose of 20,000 units of each type was given and subsequent treatment adjusted to the type ultimately found. The routine injection was 20,000 units repeated every eight hours or at least twice a day. If no improvement was found after forty-eight hours' treatment it was generally found useless to continue the serum. The total dosage varied from 50,000 to 120,000 units. Type II cases seemed to require a larger dosage than type I. After the fifth day it was generally felt that serum had no further useful action.

The following conclusions are drawn: Concentrated antiserum for type I pneumococcus reduced the fatality of type I cases of lobar pneumonia in persons between the ages of 20 and 40 but appeared to have little if any effect on older persons (from 40 to 60). It also seemed to reduce the average duration of the fever. Similar results were obtained when type II antiserum was used in type II lobar pneumonia. Immediate dangerous serum reactions were rarely seen, but one or two lots of a particular concentrated mixed serum did cause rigors and collapse. The benefits were not so marked as to make it desirable that all severe cases of lobar pneumonia, irrespective of the type of the infecting pneumococcus, should be treated with type I and type II antiserum on the chance that they might belong to a type that is favorably influenced. Each case must be typed as soon as possible, so that the appropriate serum may be used. The use of serum is not recommended except under conditions in which typing can be obtained. If accurate typing can be done in five or six hours, serum should be withheld until the type is known and the 20,000 Felton units given. But if more time is required for typing, a preliminary dose of 20,000 units of both types should be given and the corresponding serum continued when the type is known. The first injection should be made slowly and cautiously into the vein, 1 cc. being introduced in a minute or two and the total being injected in from ten to fifteen minutes. If an unfavorable reaction occurs, 0.5 or 1 cc. 1:1,000 epinephrine hydrochloride should be injected subcutaneously.

In considering the results of serum treatment in Great Britain it is important to bear in mind that pneumonia is less serious in this country than in the United States. This point is brought out in an important paper on lobar pneumonia contributed to *Guy's Hospital Reports* by J. A. Ryle and R. L. Waterfield. They point out that whether from the conditions of housing and city life prevailing in the United States or from other causes, the incidence, mortality and epidemic tendency of pneumonia is greater than in the British Isles. The hospital figures in England and Scotland show a mortality between 10 and 20 per cent. At Guy's Hospital the mortality was 16 per cent between the ages of 13 and 75 years. The more gravely ill tend to go to the hospital. Hence the mortality in private practice is lower—about 10 per cent. In the United States, on the other hand, the mortality at the Rockefeller Hospital was 19.5 per cent and at Bellevue 35.8. Among 422 cases of all types untreated with serum, Cecil found a mortality of nearly 36 per cent and among 429 cases treated with serum 28 per cent. Even this lower figure approaches twice the Guy's Hospital figure. Ryle and Waterfield are more restrained in their support of serum treatment than the therapeutics trial committee. They hold that, unless the method can be simplified, it must remain more suited to hospital than home conditions. For the most part it is contraindicated in children and adolescents, since the natural recovery rate is high in them. They would hesitate to employ it in any subject with known allergic tendencies, for they are doubtful whether the benefits would outweigh the ill effects. In previously healthy adults showing a good initial response and high leukocytosis, they would withhold serum. There thus remain adults giving cause for undue anxiety at an early stage and showing failure of leukocytosis; alcoholic addicts might be included. To these it would be justifiable to give an early dose of serum and to continue the treatment if the organism should be found to be of the appropriate type. The treatment is more worthy of consideration in type I than in type II infections. Expense prohibits the treatment for needy patients in their own homes and raises the difficult question whether to counsel their removal to a hospital. If the disease has passed its third day and adequate attention and nursing can be secured, they would usually prefer to keep the patient at home and forego the possible advantages of laboratory study and serum therapy.

Osteopaths Again Attempt to Obtain Registration

The osteopaths, undeterred by previous failures to obtain registration, are making another attempt. In the house of commons a member asked leave to introduce a bill to regulate the practice of osteopathy and to prescribe the qualifications of osteopathic practitioners. The object is to set up a statutory board with powers to compile a register of qualified osteopaths, with a prescribed standard of professional conduct. The bill would give an osteopath the right to employ a qualified anesthetist (in other words, a physician who specialized in anesthesia) without his falling under the ban of the General Medical Council. At present an anesthetist is not permitted to work for any one who is not a qualified medical practitioner. It was also stated that osteopaths did not seek inclusion in the medical profession. It was claimed that osteopaths had worked for thirty years in this country and had to their credit a large number of striking successes, while failures had been due to "quacks" practicing osteopathy. Leave was granted to bring in the bill. Opposition will come in the next stage.

Immunization Against Yellow Fever

At the Royal Society of Tropical Medicine, Dr. G. W. M. Findlay pointed out that travel by air now enabled persons infected with yellow fever to reach from endemic centers, well within the incubation period of the disease, many countries that harbored the vector of the virus. Some method of eradicating yellow fever was thus important. This could be achieved only by destruction of either the virus or the vector. As vast areas in Africa and South America are infected, it is impossible to annihilate the mosquito vector. Therefore a method of immunization was desirable. Forty years ago, Carlos Juan Finlay suggested the possibility of immunizing, but no safe or efficient means of employing the ordinary virus of yellow fever had been found. However, in 1930 Theiler discovered that yellow fever could be transmitted to mice by intracerebral inoculation. These mice did not develop visceral lesions like those found in man but died from encephalitis. Intraperitoneal inoculation was fatal only to young mice, in which the virus became localized in the central nervous system. After serial passage

the virus lost its power to produce visceral lesions in monkeys, though inoculated intracerebrally it produced encephalitis. All efforts to reconvert in monkeys and rodents the fixed neurotropic virus into a viscerotropic one failed. In this country 290 persons have been immunized by injections of neurotropic mouse-fixed virus and human yellow fever immune serum. These include officials and others going to West Africa. Thirty per cent developed febrile reactions consisting of headache and aching in the limbs and back for twenty-four to forty-eight hours, with leukopenia and slight bradycardia. In only a small number was the reaction severe. Immune bodies began to appear in the blood seven or eight hours after inoculation and attained maximum in three or four weeks. After ten months they decreased but were still detectable after sixteen months and probably persist for much longer periods. So far the success of immunization has been demonstrated only among laboratory workers, among whom accidental infection with yellow fever used to be a common accident. Since the introduction of immunization, accidents have been completely absent.

The Diabetic Association

About a year ago the brilliant idea occurred to Mr. H. G. Wells, the writer, to form with others who have diabetes an association to provide much needed financial help for the diabetic clinic at King's College Hospital. He suggested to the hospital authorities that instead of appealing to the general philanthropic public they should limit their appeals to prosperous diabetic patients who had benefited by the modern treatment of the disease. The result was startlingly successful. A single letter from Mr. Wells in the *Times* raised the required sum. Out of this sprang a permanent diabetic association, which, in addition to organizing the philanthropy of persons with diabetes, gave the advantage of opportunities for the exchange of opinions and experiences in new foods, remedies and treatment. Mr. Wells now proposes to open the diabetic association to the poor as well as to the rich for mutual aid and assistance and to promote the advance of knowledge and the diffusion of information. If diabetic patients, physicians and nurses, particularly those specializing in diabetic work, can be persuaded to join it is proposed to ask for subscriptions, select a council and issue a quarterly journal, which will contain summaries of important research work, reviews and abstracts of new books on the disease, and discussions of the special foods and new drugs that are always forthcoming. A section would be available for correspondence between members and for answers to difficulties. Foundation members willing to subscribe $25 are now being sought.

PARIS

(From Our Regular Correspondent)

Feb. 7, 1934.

The Surplus of Physicians

While the surplus of physicians has again come to the fore, it is generally admitted that there is a similar overcrowding of all the liberal professions. In spite of the notices sent out by the dean of the Faculté de médecine to the pupils in the upper classes of the *lycées* and to their parents, informing them that a medical career is becoming less and less attractive to a young man, the number of medical students continues to increase. The number of physicians in France has increased in twenty years from 16,185 to 27,500, whereas the population for that period increased only 2,000,000. The cost of a medical education also has increased. It is estimated that the total cost today is about 110,000 francs ($7,150) for the general practitioner and much more for those who hope to secure a post in the hospitals or a faculté de médecine. A physician does not begin to take in any money until he is past 30. For several years longer, he is paying off the cost of his installation, his equipment and his library. The unequal distribution of physicians over the territory is, however, just as great a disadvantage as the surplus. The average number of inhabitants per physician varies greatly in different regions. In January 1930 many French departments had from 2,000 to 2,500 inhabitants to each physician. Only the departments of the Seine and the Garonne have fewer than 1,000 inhabitants to each physician. There is a strong contrast between the density of the population and the dearth of physicians in Bretagne and in the industrial regions of the North, the East and of the Loire, in which the medical service is to a great extent assured by physicians attached to private companies. The graduate physician opens up his practice where it best suits him. His choice, however, as Mr. Roussy has brought out, is not influenced solely by economic factors—the desire to make a living—but partly by psychologic factors, such as the mode of life in a given region. But for the physician the leading of an agreeable existence in the cities is becoming a more difficult problem. The less fortunate physicians are finding less opportunity to secure permanent posts, since the social insurance act and the workmen's compensation act grant the patient free choice of physician. The Confédération des syndicats médicaux français has established a bureau that endeavors to direct young physicians of restricted means toward the rural districts. It seeks to make clear to them the hardships to which those are subjected who open a practice in the cities. The income tax, which may be fixed arbitrarily at 80 per cent of their annual rent, is not the least of the disadvantages. Some departments of France offer special inducements to physicians who consent to settle in their region. The confederation includes departmental "syndicates," which give young physicians suggestions as to suitable openings.

Increase of Mental Patients

In the report that he was requested to make on the hospital service rendered mental patients, Mr. Chausse has called the attention of the general council of the Seine to the fact that the increase in the number of mental patients in the department continues with regularity. The increase noted between Oct. 1, 1932, and Oct. 1, 1933, was exceptional. The number of mental patients rose from 16,408 to 16,888, an increase of 480. The administration explains this difference by stating that the reason the psychopathic hospitals are overcrowded is not so much the increase in the number of interments as the reduction in the number of dismissals. If one compares the reports of the past two years (1931 and 1932) it will be seen that the number of admissions rose from 4,856 to 4,942, an increase of 86. The dismissals, on the other hand, were 2,938 in 1931 but dropped in 1932 to 2,170, a decrease of 768. This is no doubt a consequence of the present economic crisis. But there is still another cause for overcrowding mentioned by Mr. Chausse; namely, the diminution in the mortality of mental patients treated in the psychopathic hospitals. The difficulty of relieving the congestion in these hospitals is apparent. One remedy that has been applied, which consists in transferring to rural hospitals patients who have no relatives and who receive no visits, has become insufficient. Under these conditions the general council has been induced to accept the suggestions of the prefect of the Seine pertaining to the erection of a new psychopathic hospital at La-Queue-en-Brie, in Seine-et-Oise.

Phrenicectomy

Emile Sergent, Kourilsky and Clément Launay recently addressed the Academy of Medicine on phrenicectomy with reference to tuberculosis and to bronchial and pulmonary suppurations. They conclude that, in pulmonary tuberculosis, phrenicectomy should be reserved for cases in which therapeutic pneumothorax is not practicable. The intervention will be more effective if it is combined with sanatorium treatment.

It is always ineffective in old sclerosed lesions, in the presence of large cavities, in acute or miliary processes, and in dilatations of the bronchi. In infected bronchiectasias it is without danger, and it is sometimes effective in cylindric bronchiectasia of recent origin. Phrenicectomy is contraindicated in the presence of putrid abscesses, particularly on the left side. It may be followed by a temporary amelioration in the more active foci but is most commonly ineffective. It is sometimes dangerous. On the whole, the authors favor pneumothorax, which is more effective and has fewer contraindications.

ITALY

(From Our Regular Correspondent)

Dec. 31, 1933.

Congress of Internal Medicine

The Società Italiana di medicina interna held its thirty-ninth national congress in Pavia, under the chairmanship of Prof. Adolfo Ferrata, director of the Clinica medica in that city. The congress convened simultaneously with the Congress of Surgery. The president, Prof. Edoardo Maragliano, senator, delivered the inaugural address, in which he recalled that the society was established in Pavia, forty years previously.

FOCAL INFECTIONS

The chief speakers on the first topic, "Focal Infections," were Professors Lusena and Chini of Rome. They pointed out that clinical observations and experimental pathology have led to the conclusion that chronic inflammatory conditions in any part of the organism (often in the mouth) may maintain morbid states in distant organs. Such points of origin of distant disorders are called foci of infection.

According to Rosenow and his followers the agents are generally streptococci or their toxins, which, emerging from the focus of infection, reach a particular organ and maintain there an inflammatory condition, being guided by the principle of selectivity. As regards the rheumatic types, the school of Rome, to which the speakers belong, has evidence to prove that a marked arthrophilia characterizes the micro-organisms cultivated from the tonsils of these patients.

Investigations carried out at the Scuola di Roma confirm the possibility that streptococci may have such a selective tropism for the nervous system as to constitute a genuine neurotropic focus.

The relations between tonsillitis and nephritis have been confirmed. The speakers have made a contribution to the subject by studying the relations of foci of infection to the thyroid, to cutaneous diseases, to puerperal infection and to abortion, or miscarriage. The focal infection theory of appendicitis, gastroduodenal ulcer and cholecystitis is supported by many clinical observations. The most frequent focus is induced by tonsillitis. Particular importance attaches also to eye disorders, such as iritis, keratoconjunctivitis, choroiditis and optic neuritis. These are often associated with sinusitis and dental caries. The speakers established the rôle of the prostate in focal infections.

In the general discussion, Professor Frugoni of Rome emphasized that the problem of focal infections is essentially a clinical problem. The question of selectivity and of tropisms experimentally is quite different from the clinical question, which constitutes the true source of fact and observation.

UREMIA

The official speaker on the second topic, "Uremia," was Prof. Ferruccio Schupfer of Florence. The speaker distinguished true uremia, or hyperazotemic uremia; the syndrome of true anuria; hyperazotemia with hypochloridemia; eclampsia in nephritic patients, and angiogenic chronic pseudo-uremia. It is not correct to regard the anuric syndrome as identical with the uremic. In the former there is, among other things, the sudden suppression of the renal function in kidneys that may have been previously sound, and there is also suppression of the elimination of water.

The cases of hyperazotemia with chloropenia, which occur in non-nephritic persons, present many points of resemblance to cases of uremia. Chloropenia is often due to marked loss of sodium chloride as a result of vomiting and diarrhea. Many postoperative hyperazotemic syndromes suggest this type.

Eclampsia of nephritic patients is to be regarded as distinct from true uremia; for, in the former, the symptoms pointing to absolute insufficiency of the kidneys are absent. The cause of the convulsions is to be sought in an edema of the brain. In treating eclamptic attacks, one must seek to combat, by means of lumbar puncture and venesection, excessive intracranial pressure.

Angiogenic pseudo-uremia has no dependent relation with renal insufficiency and may occur also in non-nephritic persons. It is characterized by arterial hypertension and by arterial spasms, chiefly cerebral.

Professor D'Arbela, of the Clinica medica in Florence, considered uremic acidosis, pointing out that, in true uremia, compensated and decompensated acidosis may be encountered, whereas decompensated alkalosis is rare and is usually to be ascribed to pseudo-uremia. In uremic acidosis the speaker distinguishes a period of latency (preuremic acidosis), a period of compensation characterized by diminution of the alkali reserve of the blood but with a normal hydrogen ion concentration, and a decompensation in which the hydrogen ion concentration becomes more distinctly acid. The kidneys play an important part in the pathogenesis of uremic acidosis, serving as regulatory organs of acid-base equilibrium. Determination of the degree of acidosis is of great diagnostic value. Antacid treatment gives good results only as a prophylactic measure.

Professor Volterra, of the Clinica medica in Florence, spoke on the chemical changes in the blood, the organic fluids and the tissues, in true uremia. These changes affect both the organic and the inorganic constituents; among the latter, one observes chiefly an increase of sulphur, phosphorus and potassium, together with a diminution of calcium. The chlorine content is variable and should be followed with great care by the attending physician, as furnishing particularly a guide in establishing dietetic norms. Importance attaches to the elimination of nitrogen. More recently, attention has been called to the aromatic compounds—indican, the phenols, the amino-acids, oxacids, and urinary chromogens—which substances accumulate in the blood of uremic patients, and the changes in their percentages are aids in the diagnosis and the prognosis.

Professor Lunedei of Florence discussed the pathogenesis of eclampsia in nephritic patients and angiogenic pseudo-uremia. Of the theories proposed, he gave special consideration to the angiospasm theory of Forlanini and to Volhard's theory of cerebral edema and concluded that neither of the two is completely satisfactory. A more recent interpretation is based on the essential elements of these two theories and assumes that the attack of eclamptic uremia is caused by a marked reduction in the flow of blood to the brain, due to arteriospasm. This change in the blood circulation is possibly followed by a sudden permeability of the capillary walls and then by cerebral edema.

In angiogenic pseudo-uremia the psychic manifestations should be attributed in part to arteriosclerotic lesions and in part to increased endocrine pressure. But some of the symptoms seem to find their most satisfactory interpretation in the angiospastic attacks, which, it would seem, must be regarded today as one of the fundamental factors of cerebral apoplexy occurring in these cases.

Mother and Child Day

December 24 was celebrated throughout Italy as a day devoted to the interests of the mother and the child. This is

the first year that such a day was set apart by the government, the purpose being to combat a trend toward a decline in the birth rate. Such propaganda appears necessary in view of the fact that recent statistics have shown that, as compared with 1,124,479 births in 1924, there were only 992,049 births in 1932, which denotes a decline of 132,000 births. This difference was not entirely covered by the diminution in the number of deaths, so that there was a net deficit of about 77,000. The birth rate has declined from 29 per thousand in 1924 to 23.8 per thousand in 1932.

The protection of mother and child is entrusted in Italy to a national organization, which is active in many related fields: the crusade against social diseases, and particularly with reference to their baneful effects on mother and child; systematic aid for expectant mothers and parturients; aid for the children of the tuberculous from the first days of their birth; aid and treatment for the children of syphilitics and malaria patients. To this society is entrusted also the propaganda for the education of future mothers, and the location in the rural districts of the institutions for the care and training of young children.

BELGIUM

(From Our Regular Correspondent)

Feb. 6, 1934.

The Diploma for Specialists

Previous letters have contained accounts of the various phases through which the problem of establishing a diploma for specialists has passed during the deliberations of the Fédération médicale belge and the Académie royale de médecine.

Professor Goovaerts recently denounced the following resolution passed by the academy: 1. The public authorities shall prohibit the use of the title of specialist by any physician who has not met the fixed requirements and shall impose on violators of the law penalties similar to those imposed for violations of the medical practice act. 2. In accordance with the legal provisions to be adopted by the public authorities, only holders of a special diploma can assume the duties of department heads in hospitals, institutes, polyclinics and dispensaries, and then, of course, only in the branches covered by the diploma. Likewise, only holders of a special diploma can be accepted by official bodies, societies or mutual associations for the practice of internal medicine, general surgery, obstetrics and gynecology, pediatrics, and other specialties to be specified.

The result of applying the provisions of this resolution, Mr. Goovaerts points out, would be to divide the medical profession into a category of superphysicians who would enjoy all the higher privileges, and a group of subordinate physicians who, owing to the threat of prosecution for illegal practice, would be kept out of all official positions, as they could not be chosen as department heads in the hospitals, polyclinics or dispensaries and could not be sanctioned by official organizations, even for the practice of internal medicine. The proposition is the work of a small body of men who, though they doubtless had good intentions, failed, he said, to take full account of the ultimate consequences of the regimentation that they approved. The proposed regulations are disapproved by the majority of the specialists. As to the physicians who make up the body of the medical profession, they are so absorbed in their daily tasks that they do not always follow with attention the resolutions formulated in their behalf (but without asking their opinions) by the royal academy and the Council on Higher Instruction. These physicians should be enlightened in regard to the dangers that threaten them. If, after being duly informed, they do not denounce the Draconian regulations that a small body of their confrères is endeavoring to impose on them, and if they do not protest vehemently against the resolution passed by the Academy, there is cause for looking despairingly into their future. They are ready, it would seem, for any abdication and any form of servitude.

On the other hand, the Société belge de chirurgie has approved unanimously the resolution of Professor de Beule, which affirms the need of creating a special diploma for surgeons, which, while not depriving doctors of medicine, surgery and obstetrics of the rights conferred on them by law, will serve to stress the need of graduate training for those who seek an official post as surgeon in a hospital or clinic. The technical and scientific progress of surgery demands imperatively the creation of a diploma guaranteeing that the holder has acquired a thorough knowledge of surgery by special studies and work under master surgeons. The society, after the adoption of this expression of principle, will take up the detailed study of the project approved by the Academy of Medicine. It will be recalled that the duty of respecting the acquired situations and legal rights has always been mentioned in all the discussions that have been held on this subject. At the meeting held Feb. 28, 1931, the third section passed the following resolution: "The Royal Academy of Medicine of Belgium, while respecting the integrity of the rights conferred by the diploma of doctor of medicine, surgery and obstetrics, takes account of the changes that the new social laws have brought about in the practice of medicine, and expresses the desire to see a diploma (or a certificate) for specialists created, and reserves for a later date a discussion of the methods of bringing about such a measure."

Controversy About Health Centers

A serious controversy has arisen at Brussels. The medical circles allege that the Société belge de médecine préventive et d'eugénique, in creating health centers to which are admitted (gratuitously in some communes, and on the payment of a small fee for the benefit of the society, in others) persons whom the physician feels that he has a right to regard as prospective clients, is exceeding the limits of the objective for which it was created. Dr. Malvoz, in an interview, confirms the opinion of the physicians: "Does not the clinical instruction of the faculties of medicine, which is constantly improving, render all physicians capable of taking blood pressures, of withdrawing blood for an examination of the urea and other constituents, or of examining a specimen of urine for the presence of albumin, sugar or the like. What would be left to the physician if his activities are to be restricted by taking away from him this essential task of his profession: the examination of a patient from both the preventive and the curative point of view? The practitioners did not wait for the creation of the Société de médecine préventive before giving periodic health examinations." It is certain that, in opening to the public the diagnostic centers, the Société belge de médecine préventive et d'eugénique is trespassing on the prerogatives of the physician. That must not be, for at present the situation of the physician, which is difficult at the best, will not admit of any competition on the part of social organizations.

Opening of Prince Leopold Institute of Tropical Medicine

The Prince Leopold Institute of Tropical Medicine at Antwerp was recently opened. The port of Antwerp is the logical port at which persons land who are returning home after service in Africa. It likewise affords shelter to a considerable number of sailors of all nationalities, whose health it watches over carefully. The institution, which occupies 2½ acres of land in the city of Antwerp, has placed side by side the part that is purely colonial and the various scientific departments: the bacteriologic laboratory, the chemical laboratory, the museum of hygiene, and the sanitary service. The theoretical instruction in tropical pathology is combined with the clinical

instruction. There is a small hospital of fifty beds with all the modern comforts. The new institute has taken over a triple function; it is a university, laboratory and hospital combined. It is designed to furnish graduate instruction to physicians planning to practice in the Belgian Congo, to provide instruction for missionaries, sanitary officers and nurses who expect to serve in Africa, and, finally, to carry on scientific research.

Insurance Against Occupational Diseases

Dr. Glibert has published an article giving a survey of the insurance against occupational diseases in Belgium. The law has rendered inestimable services and, although only four years has elapsed since the system was introduced, it has been sufficient to show the value of the methods constituting the mode of reparation.

Four hundred requests for indemnification were presented to the "Fund"; 357 were made the subject of medical inquiries, and only a single case was taken to the courts. The inquiries dealt chiefly with lead poisoning and a few rare cases of hydrargyrism and anthrax infection, the three diseases accepted by the first Convention of Geneva on the subject and by the royal decrees in force at the time the research was begun.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 12, 1933.

Iodine in Thyroids of Cattle

The thyroids of cattle in the cattle zones of Argentina (as reported by Mazzoco, Ruff and Torino) and in Uruguay (as reported by Goslino) are rich in iodine content. In cows and sheep there is an average of 400 mg. of iodine per hundred grams of thyroid powder, not previously deprived of the fat, by ether. According to Ruff the figures are slightly higher in winter (434 mg.) than in spring (391 mg.) and in summer (366 mg.). The preceding data concern the area of the littoral of Argentina, the most important cattle area in the country. In Salta province, however, the content of iodine in the thyroids is lower, specially in the areas where goiter is endemic (as reported by Mazzocco). The permanent committee of the pharmacopeia has suggested the adoption of a standard in order that all the commercial thyroid preparations may have an equal amount of thyroxine. The standard would be used until there is an international method adopted.

Continuous Paroxysmal Tabetic Topalgia

This syndrome was described by Sicard in 1921. The algia is fixed in one area, does not irradiate and is constant. It is accompanied by a constant painful paroxysmal crisis and sometimes also is by tremors. Dr. Julio Diez reported recently a case in which an ample posterior radicotomy (sixth cervical to second dorsal) completely failed. Diez then performed an anterolateral cordotomy, which brought about a complete disappearance of the pain. He believes that in this disease there might be a radicular lesion but that the pain is caused by the medullary lesion and that the only surgical treatment for continuous paroxysmal tabetic topalgia is an anterolateral cordotomy.

A Discussion on Tropical Pathology

A discussion of tropical pathology was conducted, last October, at a meeting in Santiago del Estero, under the presidency of Dr. S. Mazza. There were discussions on exanthematous typhus, and Drs. Brumpt of Paris and Veintemillas of Bolivia read papers on vectors of mountain fever and its therapy, respectively. Drs. Mazza, Martinez and Cornejo Arias spoke on Trypanosoma cruzi in children and adults and Dr. Mazza on Trypanosoma cruzi in mammals. Papers were read on malaria and hemoglobinuric fever. There were more than twenty papers read by Drs. Hormaeche, Videla, Rey, Mazza, Canal, Feijóo, Cornejo, Argañaraz and others on brucellosis. Drs. Langeron of Paris, Mackinnon of Montevideo, Talice, Niño, D'Accini, Canal and Feijóo spoke on mycosis.

Pan-American Sanitary Conference

The date for the ninth Pan-American Sanitary Conference, which is to take place in Buenos Aires, has been postponed several times. However, the members of the committee, under the direction of Dr. G. Araoz Alfaro, in accord with the government, have decided to have the meeting in 1934.

Congress of Obstetrics and Gynecology

The second Congress of Obstetrics and Gynecology will meet in Buenos Aires in July 1934. The topics to be discussed will be tuberculosis and pregnancy, ovarian insufficiency, and conservative surgery in gynecology.

University News

The "Luis Güemes" prize was awarded to Dr. R. Izzo for his book "Semeiologia de la Azotemia." The Pascual Palma prize was awarded to Dr. O. Marottoli for his book "Estudio Ortopédico sobre la Cadera."

Drs. E. Beretervide, J. J. Puente, P. O. Dezeo, L. Figueroa, Alcorta, A. Di Ció, O. Prestini, E. Coni Molina and H. Aprile have been nominated assistant professors of pediatrics, dermatology, hygiene, urology, medical clinics, gynecology, prosthetic technic and dental anatomy, respectively, in the Faculty of Medicine of Buenos Aires.

Deaths

The following deaths have been reported:

Dr. Juan B. Señorans, the initiator of studies on experimental physiology in Argentina (1883-1886), formerly professor of legal medicine and toxicology at the Faculty of Medicine of Buenos Aires, honorary professor of the Faculty of Medicine of Buenos Aires and honorary member of the Academia de Medicina of Buenos Aires, aged 74.

Dr. Martín Castro Escalada, assistant professor of otorhinolaryngology of the Faculty of Medicine of Buenos Aires, aged 52.

Dr. Alfredo Larguía, formerly director of the Conservatorio de vacuna antivariólica of Buenos Aires and formerly director of the Hospital de Niños of Buenos Aires.

RIO DE JANEIRO

(From Our Regular Correspondent)

Dec. 15, 1933.

The National Conference for the Protection of Children

The first National Conference for the Protection of Children has just been held in Rio de Janeiro under the presidency of Prof. Olinto de Oliveira, head of the department of children in Brazil. The medical delegates of the Brazilian states, who were in session for eight days, discussed subjects related to the life of children, from every aspect. For the protection of children in Brazil, the following points were considered:

1. The law must eliminate the inequality of conditions of children, which is the most unjustifiable of all social inequalities, and insure when possible the necessities for health, education, rest, comfort and amusements.

2. The federal constitution must insure the protection of the family, of maternity and of infancy.

3. The activities of the federal, state and municipal legislative bodies must be coordinated in maintaining the "code of children," which contains the fundamental principles of all Brazilian legislation on the subject.

4. The law must insure (*a*) the protection of large families, (*b*) the familial vote, (*c*) the civilian rights of women on the same footing as the political rights already established, (*d*)

punishment for abandoning the family and for its infection, (*e*) the prenuptial medical examination, (*f*) facilities for adoption, (*g*) the effective repression of criminal abortion, (*h*) the especial protection of illegitimate children, (*i*) the punishment of omissions on the part of the father or guardian with regard to the education of their children and wards, (*j*) the efficiency and legality of the civil legislation, (*k*) the exercise of the paternal power in the interest of the minor, and (*l*) the development of the natural aptitude of women to cope with childbearing.

5. Legislative and administrative measures should be adopted tending to restrict infant mortality and morbidity and for the moral defense of childhood.

6. Institutions and services necessary for the protection of children should be organized throughout the country and their efficiency insured.

7. Festive occasions should be promoted regularly, such as (*a*) health contests, (*b*) breast feeding contests; (*c*) selection of the best student in schools, (*d*) of the cleanest poorhouse, (*e*) prizes for good conduct, and (*f*) prizes for numerous, healthy children.

8. In the federal, state and municipal budgets a certain percentage should be reserved to pay the expenses of the services of protection and assistance to children and of their education.

Regulation of the Sexual Cycle

Dr. Thales Martins recently gave an interesting lecture on regulation of the sexual cycle before the Society of Biology of São Paulo. He discussed the regulation of the activity of the sex glands by the hypophysis and of the latter by the ovary or the testicle. He described the dual action of the testicular hormones, one of which acts on the secondary sex characteristics and the other controls the activity of the hypophysis. He explained the influence of the nervous system on the sexual sphere through the intermediary of the hypophysis, which regularly discharges hormones in the blood. He discussed the migration of animals, birds and fishes and cited the work of a commission of members of the Royal Society, who concluded that the migration was actuated indirectly through the interrelation of the hypophysis and the sex glands and that it could be obtained by injection of hormones.

The Annual Conferences of the Free Teachers

The free teachers of the Faculty of Medicine of the University of Rio de Janeiro have decided to give a series of annual conferences in order to make known the work done in all fields of medicine. The conferences that have already been given were attended by a large number of physicians and students. The free teachers play an important part in the medical instruction of Brazil because they are mostly young physicians full of ideals and enthusiasm who dedicate themselves to the work of instruction and attain great success, some of their lectures being superior to those given by professors. The annual conferences have awakened great interest in student circles.

A Small Epidemic of Neuromyelitis

Professor Austregesilo, in the name of Drs. Borges Fortes and Euridice de Magalhães, presented to the National Academy of Medicine experimental and anatomopathologic studies on neuromyelitis which they have been conducting. In a series of preparations he demonstrated the meningomedullary changes and the lesions in the anterior parts of the lateral tracts showing atrophic and vascular changes. The nucleus ambiguus was found greatly altered. The lesions of periaxial neuritis of the sciatic nerve were evident. The recent inoculations of substances obtained from nine patients in the cornea of rabbits have resulted in experimental corneal lesions. The speaker called attention to the neurotropic virus, which for about one year has produced a small epidemic of neuromyelitis.

BUCHAREST

(From Our Regular Correspondent)

Feb. 20, 1934.

Rockefeller Foundation Aids Dispensary in Bucharest

Rumania, whose present territory is three times as large as it was prior to the war, has to expand its medical institutes, which are used for the purpose of teaching medical students. The first one to be enlarged is the Public Health and Hygiene institute, which will be one of the best equipped in Europe. The magnificent building, which will be ready in April or May, will shelter a modern preventive medical dispensary. The huge costs will be covered equally by the ministry of public health, the city of Bucharest and the Rockefeller foundation. The costs of upkeep will be shared likewise, but only for the first five years; thereafter the Rockefeller foundation will gradually withdraw. The preventive dispensary will imitate one of New York's institutes, which a special committee studied last summer. The new Bucharest dispensary will supply preventive medicine for an important district of the capital city but will also serve to educate the hygienists of the country.

The New Minister of Health

Some years ago in Rumania, three members of the ministerial cabinet were physicians. One would expect that among these would have been the minister of health. Not at all. To the latter post a lawyer was appointed. The same thing has happened again. In the new liberal government, which constituted itself last December, the health minister is a layman, while the minister of public instruction is a physician, Dr. Anghelescu. But the state secretary of the minister of health is a physician, who was a practitioner in a remote town. He was elected a member of the chamber of deputies and then appointed to state secretaryship.

Only good can be expected from the new régime, for Professor Gane, the state secretary, proved himself competent in 1926, when the new public health law was framed under his guidance.

Health Insurance in Bulgaria

According to the present law, insurance is compulsory for all those who work as employees in industry, commerce and agriculture. The administrators of the insurance are the friendly societies, which are organized according to territorial apportionment. Every society has a board of managers of nine or twelve members, of whom one third are employers and two thirds employees. Supervision over the societies is exercised by the sickness insurance council, in which the medical profession is well represented. Two thirds of the expense is paid by the employees and one third by the employers. The state pays 50 per cent of the administrative costs of the district societies. The insurance is due from the third day of sickness to the amount of 50 per cent of the wage. Medical attendance, drugs and hospital accommodations may be paid for twenty-six weeks.

Medical attendance is regulated by the state and there is the fullest free choice of physician. The societies have the right to employ contract physicians, but the members are at liberty to consult also noncontract physicians. Doctors' bills are supervised by a committee appointed by the medical association. In regard to drugs, there is a list of those which may be prescribed without any restriction; there is another list containing proprietary medicines: these can be ordered only with special justification of their being necessary. Drug stores have to allow a reduction of 20 per cent, but should the amount purchased from them exceed a certain sum, the reduction amounts to 25 per cent.

In legal disputes arising between physicians and the friendly societies the council makes the decisions.

Marriages

BENNIE BOOKER DALTON, Red Springs, N. C., to Miss Willie Grace Covington of Mebane, at Wassaic, N. Y., March 2.

GREGORY GEORGE SHIELDS, Abbotsford, Wis., to Miss Blanche Knutson of Viroqua, at Milwaukee, Dec. 28, 1933.

JOHN PAUL TIERNEY, Boston, to Miss Mary Ellen Schleehauf of Cincinnati, at Covington, Ky., January 28.

ANTHONY CHARLES JOSEPH HAHN to Miss Harriet A. Nowack, both of Watertown, Wis., January 23.

JOSHUA TAYLOE, Washington, N. C., to Miss Mary Ann Jamison of Richmond, Va., Dec. 27, 1933.

FRITZ JOSEPH MOENNIGHOFF, Wichita, Kan., to Miss Alfreda Voge of Kansas City, recently.

CARL H. BENDLER to Miss Grace Imogene Campbell, both of Gary, Ind., February 3.

EDGAR F. FINCHER, JR., to Miss Helen Nichols, both of Atlanta, Ga., February 10.

FRED CARL ENDRES, Peoria, Ill., to Miss Ida Wheeler of Yates City, recently.

MAX W. FLOTHOW to Mrs. Myrtle Strehlow, both of Omaha, recently.

Deaths

Max Ballin ● Detroit; University of Berlin, Germany, 1892; formerly clinical professor of surgery, Detroit College of Medicine and Surgery; member of the American Surgical Association; fellow of the American College of Surgeons; served during the World War; surgeon to the Harper Hospital, consulting surgeon to the Children's Hospital, Woman's Hospital and the Highland Park (Mich.) General Hospital; received the class two gold medal for his exhibit on parathyroidism at the annual session of the American Medical Association in New Orleans in 1932; aged 64; died, March 3, of heart block.

Frederic Shephard Dennis ● New York; Bellevue Hospital Medical College, New York, 1874; member and past president of the American Surgical Association; member of the Connecticut State Medical Society; fellow of the American College of Surgeons and the Royal College of Surgeons; since 1910 emeritus professor and from 1898 to 1910 professor of clinical surgery, Cornell University Medical College; professor of surgery at his alma mater from 1883 to 1898; consulting surgeon to the Bellevue, St. Vincent's and Montefiore hospitals, New York, and the Litchfield County Hospital, Winsted, Conn.; author of Dennis' System of Surgery; aged 83; died, March 8, of heart disease.

Paul Edgar McNabb ● Major, M. C., U. S. Army, Washington, D. C.; University of Pennsylvania School of Medicine, Philadelphia, 1912; served during the World War; fellow of the American College of Physicians; member of the American Association of Pathologists and Bacteriologists, Tennessee State Medical Association, and the International Association of Medical Museums; curator of the Army Medical Museum, 1931-1933; at one time president of the U. S. Army Medical Department Research Board in Manila, P. I.; aged 46; died, February 24, in the Walter Reed General Hospital, of progressive hypertensive disease and cerebral hemorrhage.

Harold L. Van Metre ● Los Angeles; State University of Iowa College of Medicine, Iowa City, 1915; associate clinical professor of surgery, University of Southern California School of Medicine; instructor in surgery at his alma mater, 1917-1919; fellow of the American College of Surgeons; on the staffs of the Hospital of the Good Samaritan, Methodist Hospital of Southern California, Los Angeles General, Hollywood Clara Barton Memorial and California hospitals; aged 45; died, January 27.

Claude Percival Fryer ● Maryville, Mo.; Willamette University Medical Department, Salem, Ore., 1906; member of the Kansas Medical Society; formerly field agent of the U. S. Public Health Service and health officer of Brown County with headquarters at Hiawatha, Kan.; for many years health officer of Nodaway County, Mo.; aged 60; died, Nov. 9, 1933, of coronary thrombosis.

Rolfe Eldridge Hughes, Laurens, S. C.; University of Maryland School of Medicine, Baltimore, 1892; member and past president of the South Carolina Medical Association; past president and for many years secretary of the Tri-State Medical Association of the Carolinas and Virginia; past president of the Laurens County Medical Society; aged 65; died, Dec. 2, 1933.

John Joseph Farrell, Hannibal, Mo.; Washington University School of Medicine, St. Louis, 1901; member of the Missouri State Medical Association; formerly secretary of the Marion County Medical Society; aged 54; on the staffs of the Levering Hospital and St. Elizabeth's Hospital, where he died, Dec. 3, 1933, of cerebral hemorrhage.

Charles Bickham Ford ● Seattle; Bellevue Hospital Medical College, New York, 1895; past president of the North Pacific Surgical Society; fellow of the American College of Surgeons; visiting gynecologist to the Seattle City Hospital and surgeon to the Children's Orthopedic Hospital; aged 60; died, February 20, of bronchopneumonia.

Peter N. K. Schwenk ● Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1882; member of the American Ophthalmological Society; fellow of the American College of Surgeons; for many years on the staffs of the Wills Hospital and the Pennsylvania Hospital; aged 79; died, February 17, of pneumonia.

Arthur B. Chandler, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1906; served with the Canadian Army during the World War; head of the children's department of the Montreal General Hospital and medical director of the Child Welfare Association; aged 50; died, February 13.

Frank Bell Fuson, Larned, Kan.; Missouri Medical College, St. Louis, 1886; member of the Kansas Medical Society and the American Psychiatric Association; formerly health supervisor for the state eleemosynary institutions; on the staff of the Larned State Hospital; aged 74; died, February 4, of nephritis.

Benjamin Butler Keys ● Murray, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; past president and secretary of the Calloway County Medical Society; member of the state board of health; part owner of the Keys-Houston Clinic Hospital; aged 53; died, January 25, of heart disease.

Albert Marion Earel ● Hoopeston, Ill.; Rush Medical College, Chicago, 1891; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 67; died, February 25, in the Lake View Hospital, Danville, of a basal skull fracture received when he fell through an elevator shaft.

James Young McCullough ● New Albany, Ind.; University of Louisville (Ky.) School of Medicine, 1907; past president of the Floyd County Medical Society; secretary of the county board of health; on the staff of St. Edward's Hospital; aged 51; died, February 22, of hypernephroma.

Claude Edward Case ● Clifton Springs, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1917; fellow of the American College of Physicians; on the staff of the Clifton Springs Sanatorium and Clinic; aged 40; died, January 27, in Doylestown, Pa., of lymphosarcoma.

William Clifton Black, Greenville, S. C.; University of Maryland School of Medicine, Baltimore, 1886; member of the South Carolina Medical Association; fellow of the American College of Surgeons; surgeon to the City Hospital; aged 73; died, Dec. 12, 1933, of cirrhosis of the liver.

Alonzo Blauvelt, New York; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, New York, 1876; for many years member of the city health department; aged 79; died, February 20, in Maplewood, N. J., of heart disease.

James Dunaway McCann, Raymondville, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; member of the State Medical Association of Texas; veteran of the Spanish-American War; aged 64; died, January 31, of heart disease.

Godfrey Oldfeild Cuppaidge, Moberly, Mo.; L.R.C.S., Ireland, 1883, L.K.Q.C.P., Ireland, 1884; member of the Missouri State Medical Association; formerly health officer of Moberly; aged 73; died, Nov. 18, 1933, of cerebral thrombosis.

Zopher F. Dunning ● Milford, Conn.; Albany (N. Y.) Medical College, 1888; member of the Medical Society of the State of New York; on the staff of the Milford Hospital; aged 69; died, February 4, of carcinoma of the prostate.

John Walker Carter Jones ● Newport News, Va.; University of the South Medical Department, Sewanee, Tenn., 1900; on the staffs of the Riverside and Elizabeth Buxton hospitals; aged 55; died suddenly, February 9, of coronary thrombosis.

Donald Henry Conterman, Oneida, N. Y.; Syracuse University College of Medicine, 1923; member of the Medical Society of the State of New York; for six years health officer of Oneida; aged 35; died, Dec. 26, 1933, of pneumonia.

Francis Marion Crain ● Redfield, S. D.; Medical College of Fort Wayne, Ind., 1882; Rush Medical College, Chicago, 1891; past president of the South Dakota State Medical Association; aged 76; died, February 13.

Floyd Alvah Bird, Olympia, Wash.; Missouri Medical College, St. Louis, 1899; member of the Washington State Medical Association; fellow of the American College of Surgeons; aged 56; died, Nov. 26, 1933.

Abram G. Jones, Walnut Cove, N. C.; University of the City of New York Medical Department, 1868; member of the Medical Society of the State of North Carolina; Civil War veteran; aged 89; died, January 15.

William Roy Keller ● Dover, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1910; served during the World War; on the staff of the Union Hospital; aged 46; died, February 14, of heart disease.

Edward McIntyre Haley, Blossburg, Pa.; University of the City of New York Medical Department, 1888; served during the World War; aged 69; died, January 29, in Northport, N. Y., of lobar pneumonia.

Alfred F. Whitehurst, Iuka, Miss.; University of the South Medical Department, Sewanee, Tenn., 1898; member of the Mississippi State Medical Association; aged 65; died in December 1933.

Charles Fuller Clark, Omaha; University of Michigan Medical School, Ann Arbor, 1881; member of the Nebraska State Medical Association; aged 77; died, February 10, of heart disease.

Enoch A. Burwell, Nokomis, Ill.; Missouri Medical College, St. Louis, 1884; formerly bank president and president of the school board; aged 77; died, January 27, of cerebral hemorrhage.

Hugh Torrance McLaughlin, Steubenville, Ohio; State University of Iowa College of Medicine, Iowa City, 1881; formerly a medical missionary; aged 77; died, January 29, of thrombosis.

Frank Herbert McCray ● Schaller, Iowa; Sioux City College of Medicine, 1896; past president and secretary of the Sac County Medical Society; aged 67; died, January 15, of septicemia.

William Winter Beall, Baltimore; Howard University School of Medicine, Washington, D. C., 1888; aged 74; died, Dec. 29, 1933, of myocardial insufficiency and arteriosclerosis.

Jacob Edward Herman, Brooklyn; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, 1888; aged 69; died, Dec. 23, 1933.

Gertrude B. Kelly, New York; Woman's Medical College of the New York Infirmary for Women and Children, 1884; aged 72; died, February 16, of arteriosclerosis.

James Dallas Kirk, Roanoke, Va.; Long Island College Hospital, Brooklyn, 1870; for many years member of the school board; aged 87; died, Dec. 22, 1933, of pneumonia.

Thompson Wright Grace, Port Lavaca, Texas; Kentucky School of Medicine, Louisville, 1891; aged 67; died, Nov. 2, 1933, in Victoria, of acute dilatation of the heart.

George Dillwyn Green, Waynesville, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1872; aged 84; died, Dec. 18, 1933, of chronic myocarditis.

Enrico Scimeca, New York; Royal University of Palermo Faculty of Medicine and Surgery, Palermo, Italy, 1893; aged 66; died suddenly, Dec. 31, 1933, of heart disease.

Emmett Black, Arcadia, Calif.; Western Pennsylvania Medical College, Pittsburgh, 1909; aged 51; was instantly killed, February 10, in an automobile accident.

Maurice H. Rosenberg, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1894; aged 62; died, February 28, in the Michael Reese Hospital.

John S. Miller, Los Angeles; University of Missouri School of Medicine, Columbia, 1879; American Medical College, St. Louis, 1880; aged 75; died, Nov. 22, 1933.

William John Hendry, Baltimore; University of Toronto Faculty of Medicine, 1933; aged 24; died, February 18, in the Johns Hopkins Hospital, of poliomyelitis.

Edgar Hunt, Hampton, N. J.; Bellevue Hospital Medical College, New York, 1878; aged 76; died, Dec. 19, 1933, of erysipelas of the face and acute pleuritis.

Charles Elmer Field, Brockton, Mass.; Harvard University Medical School, Boston, 1878; aged 80; died, February 14, in the Brockton Hospital, of pneumonia.

Glenn Taylor Logsdon, Los Angeles; University of Tennessee Medical Department, Nashville, 1924; aged 41; died, January 5, of poison, self-administered.

Franklin McKinley, Parkersburg, W. Va. (licensed, in West Virginia under the Act of 1881); aged 85; died, January 16, of myocarditis and nephritis.

Llewellyn Bartlett Richards, Syracuse, N. Y.; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; aged 89; died, Dec. 29, 1933.

Howard Eaton Lomax ● Albany, N. Y.; Albany Medical College, 1892; served during the World War; aged 65; died, January 13, of pulmonary embolism.

John J. McLean ● Jersey City, N. J.; Halifax Medical College, Halifax, N. S., 1879; on the staff of the Christ Hospital; aged 79; died, January 12.

Henry Plummer Lovewell ● Providence, R. I.; Harvard University Medical School, Boston, 1894; aged 67; died, January 1, of coronary thrombosis.

John Newton Calhoun ● Lisbon, Ohio; Western Reserve University Medical Department, Cleveland, 1876; aged 80; died, February 11, of pneumonia.

Louis Francis Zachary, Livingston, Tenn.; University of Louisville (Ky.) School of Medicine, 1894; aged 68; died, Dec. 1, 1933, of heart disease.

John M. Henderson, Waelder, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 84; died, Dec. 14, 1933, of typhus fever.

Joseph M. Gilbert, English, Ky.; Louisville Medical College, 1893; member of the Kentucky State Medical Association; aged 66; died, February 12.

Nathan Ramsey Simmons, Toledo, Ohio; Hahnemann Medical College and Hospital, Chicago, 1884; aged 76; died, January 29, of enterocolitis.

Richard Coopender Bankston, Tampa, Fla.; Tulane University of Louisiana Medical Department, New Orleans, 1888; aged 79; died, February 1.

Francis Marion Bourland, Houston, Texas; Missouri Medical College, St. Louis, 1890; aged 69; died, in February, at the Hermann Hospital.

Jefferson G. McKinney, Plattsburg, N. Y.; College of Physicians and Surgeons, Baltimore, 1886; aged 73; died, January 27, in Orlando, Fla.

Jesse Franklin Campbell, Mangum, Okla.; Atlanta College of Physicians and Surgeons, 1902; aged 57; died, February 19, of pneumonia.

Leon O. Vaughan ● Waverly, Va.; Medical College of Virginia, Richmond, 1904; aged 58; died suddenly, Nov. 26, 1933, of heart disease.

J. W. Myers, Philippi, W. Va.; Physio-Medical College of Indiana, Indianapolis, 1895; aged 61; died, January 16, of cerebral hemorrhage.

James Eddy Montgomery, Los Angeles; College of Physicians and Surgeons, Baltimore, 1886; aged 70; died, Nov. 2, 1933, of carcinoma.

Hermann Duesing ● Bridgeport, Conn.; University of Wurzburg, Germany, 1891; aged 64; died, January 31, of coronary occlusion.

Robert Lee Little, Judsonia, Ark.; College of Physicians and Surgeons, Dallas, Texas, 1906; aged 68; died, February 10, of heart disease.

Almon Dahlgrene Shipley, South Gate, Calif.; University of Wooster Medical Department, Cleveland, 1880; aged 86; died, January 21.

Peter Sloan Keim, Cleveland; Jefferson Medical College of Philadelphia, 1896; aged 60; died, January 4, of cerebral hemorrhage.

Martin C. Carr, Duquoin, Ill.; Missouri Medical College, St. Louis, 1876; aged 83; died, February 15, of organic heart disease.

John C. McLellan, Leamington, Ont., Canada; Saginaw (Mich.) Valley Medical College, 1902; died, Nov. 17, 1933.

Thomas M. McIntosh, Thomasville, Ga.; Atlanta Medical College, 1875, aged 80; died, Dec. 4, 1933, of heart disease.

Cecil Ephraim Smith, San Francisco; Rush Medical College, Chicago, 1900; aged 56; died, Dec. 8, 1933.

Elijah Emery Rose, Ewing, Va. (licensed in Tennessee in 1889); aged 80; died, Dec. 27, 1933, of senility.

Correspondence

GRANULOCYTOPENIA

To the Editor:—My reason for commenting on an article in THE JOURNAL, February 17, entitled "Granulocytopenia," by Pauline Zinninger, is that the two cases described may possibly be instances of leukosis (leukemia) rather than of agranulocytosis. The two conditions are frequently confused, despite what may seem at first glance obvious differences. It is becoming increasingly evident that the diagnosis of agranulocytosis, granulocytopenia and the like is being made on the basis of a very low leukocyte count without much consideration being given to the possibility that the leukopenia might not be primary but rather secondary to some such disorder as aplastic anemia, aleukemic leukosis (leukemia), generalized sarcomatosis with involvement of the bone marrow, or even sepsis. True or primary agranulocytosis is probably an intrinsic disorder of the bone marrow (metabolic in type?) in which the granulocytes either do not grow at all or do not properly maturate. Only rarely is there an associated anemia or reduction in the blood platelets.

It may well be true that Dr. Zinninger's case 1 was an instance of primary agranulocytosis. However, when one notes that in the patient's second attack the hemoglobin and red blood cell count steadily diminished and the leukocyte count suddenly increased to 20,000 and 36,300 with the appearance in the peripheral blood of myelocytes and myeloblasts, the impression is obtained that the patient may not have had agranulocytosis but rather acute myelogenous leukemia. The fact that the high white blood cell count followed two injections of extract of gastric juice (addisin) does not prove anything, and it seems unwise to say that there was a "satisfactory response" to addisin, especially since the patient at this point began to go definitely down-hill and died within a month. I saw the same sort of "response" in a patient with aleukemic myelosis (aleukemic myelogenous leukemia) following the injection of liver extract, the leukocyte count rising to 250,000; and spontaneous reversions in cases of aleukemic leukosis to a high white cell count are not at all unusual.

There are other features in Dr. Zinninger's case 1 that seem to me typical of leukosis: (1) the necrotic lesions of the skin and subcutaneous tissues, (2) the failure of response to pentnucleotide, (3) the progressively down-hill course with a rising white count and anemia, (4) the postmortem examination of the spleen, which was moderately enlarged and which showed effacement of normal architecture and infiltration with cells which "were largely mononuclear, but some showed polymorphic nuclei" and (5) the sections of the bone marrow, which showed "a very active regeneration of the marrow with many granular cells present." (No mention is made of the condition of the red cells or megakarocytes.) Dr. Zinninger mentions the concept enunciated by Fitz-Hugh and Krumbhaar of "maturation arrest." I feel that this concept may be overemphasized and that several cases of acute leukosis have probably been on this account mistakenly diagnosed agranulocytosis, even though the marrow showed large numbers of myeloblasts and myelocytes. The author's case 2, in which necrotic lesions of the skin developed and the course was rapidly progressive to death, may also have been leukosis despite the low white blood cell count. I have myself been guilty of confusing acute leukosis with agranulocytosis. Recent reexamination of the bone marrow biopsy sections of case 1 in my first paper on the subject (*Am. J. M. Sc.* **181**:502 [April] 1931) reveals typical myeloblastic proliferation, which at the time escaped me and others.

Most cases of "agranulocytosis" that I see turn out to be acute aleukemic leukosis (leukemia), usually myelogenous in type. These may be diagnosed by the progressive usually macrocytic anemia, progressive reduction in blood platelets, and leukopenia with the presence usually in the peripheral blood of myeloblasts (often diagnosed incorrectly as lymphocytes, monocytes and large mononuclear cells). I have found sternal bone marrow biopsy of prime importance in the diagnosis. Lymphosarcoma may give almost the same picture if it metastasizes to the bone marrow, and one case of myelosarcoma (chloroleukosarcoma, chloroma) that I saw was diagnosed as agranulocytosis. Peculiarly enough, the great majority of the cases of leukosis I have seen are aleukemic. They masquerade not only as agranulocytosis but as pernicious anemia, splenic anemia, Banti's disease, aplastic anemia and purpura hemorrhagica. Aleukemic leukosis should always be considered in cases presenting obscure anemia, leukopenia and thrombocytopenic purpura.

Considerable skepticism has been aroused recently regarding the value of the pentose nucleotides in the treatment of agranulocytosis. Many physicians report failure in their cases. The majority of failures, as I have noted in a recent paper (Agranulocytosis: Report of Three Cases Treated with Nucleic Acid Derivatives, *New England J. Med.* **209**:1054 [Nov. 23] 1933) may be the consequence of incorrect diagnosis. Successful therapy in the presence of aleukemic leukosis or profound sepsis cannot be expected. Another possible reason for failure may be the occasional inefficacy of the pentose nucleotides in stimulating the maturation of the bone marrow leukocytes. In one case under observation now, treatment with pentnucleotide caused extremely severe reactions, during which the white blood cell count fell progressively to 500. When the more simple nucleic acid derivative adenine sulphate, which was first used by Reznikoff (*J. Clin. Investigation* **9**:381 [Dec.] 1930) and which may possibly be the active principle of the pentose nucleotides, was given, no further reactions occurred and the patient showed rapid improvement.

WILLIAM DAMESHEK, M.D., Boston.

REPORT OF A TOXIC MANIFESTATION DUE TO "DINITRENAL"*

To the Editor:—The need for caution in the use of dinitrophenol as repeatedly suggested in recent issues of THE JOURNAL prompts me to submit the following report:

A white woman, aged 32, entered my office, February 15, complaining of violent itching of the palms of the hands of five days' duration. Her previous history was completely negative. She stated that she had had a generalized mottled eruption ten days previous to the onset of the itching. The rash had lasted three days. She further stated that about ten days before the appearance of the eruption she had begun to take two capsules of "Dinitrenal" daily on the advice of a friend who told her that she could reduce this way without dieting. At the end of a week she increased the daily dosage to four capsules, according to the instructions on the label of this proprietary product. Physical examination revealed moderate swelling of both hands. Irritation of the skin of the hands or of the trunk by scratching or rubbing elicited typical urticarial wheals. (There was no history of previous anaphylaxis.) The temperature was 99.6 F., the pulse rate 80. Examination of the urine gave negative results.

The pruritus proved extremely resistant to all forms of treatment. It was so severe that the patient was unable to sleep for almost six full days in spite of strong somnifacients. Then the pruritus gradually disappeared.

SIDNEY HIRSCH, M.D., Cedarhurst, L. I., N. Y.

* Dinitrenal is the trade name for a product marketed by the Drug Products Company of Long Island City. The label gives the contents of each capsule as: Dinitrophenol sodium, gr. 1½; Suprarenal desiccated, gr. ½; Carbo vegetalis.

NIGHT BLINDNESS

To the Editor:—Dr. Holcomb's interesting communication (THE JOURNAL, March 10, p. 786) mentions the fact that night blindness was known to classical medicine and yet there was, even then, the same confusion as to designation that has persisted to the present time. As shown by his quotations, both Hippocrates and Rhazes use the term "nyctalopia" to mean poor vision at night; i. e., with lowered illumination. Dr. Holcomb himself speaks of "nyctalopia" as appearing frequently in Russia with the lenten fasts. This term is generally used at present for "owl-sight," i. e., vision in the dark, or for the vision of the dark-adapted eye. For night blindness a paraphrase is made with the term "hemeralopia," meaning (good) sight in daytime; i. e., bright light; thus the "nyctalopia" in the British Black Sea Fleet during the war in the Crimea described by John Rees, quoted as hemeralopia. The logical French have discarded this term and have substituted for it "hesperanopia," meaning night-non-vision. If this or some similar term such as nyctanopia is not adopted, medical writers should at least use the present current terms correctly.

PERCY FRIDENBERG, M.D., New York.

DUST COVER FOR APPARATUS

To the Editor:—A dust cover for apparatus, made from discarded x-ray films, was described by Dr. R. H. McClellan in THE JOURNAL, Nov. 4, 1933. This useful and economical protection for instruments can be made more dust tight if Duco household cement is used to fasten the seams. I have also found that it is easier to construct the covers by cementing the seams than by using the stationers' piercing paper fasteners suggested by Dr. McClellan. Film cement, of course, could be used, but this is more expensive and has no advantage over the Duco cement except quicker drying. Care should be taken not to use the cement too generously; otherwise the film will be unduly softened and unworkmanlike joints produced.

DONALD A. LAIRD, PH.D., Sc.D., Hamilton, N. Y.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

UNIVERSAL ALOPECIA AREATA

To the Editor:—I have a patient who started to lose all the hair on his body last May and now for three months he has not had any. He has not had to shave for three months. He is a married man with two children and the only thing he complains of is that he is cold all the time and almost has a chill every time he goes outdoors. He also complains of feeling tired. He has the appearance of a man in good health. All the blood and urine tests are negative. What is best to do for him? Please omit name.

M.D., Illinois.

ANSWER.—This man has alopecia areata which has become universal. The baldness has a depressing mental effect and this may account for his tired feeling and inability to resist cold, though every effort must be made to find other constitutional conditions that can be held responsible for them. He must be told at the start that response to treatment will no doubt be slow and that he must expect to take treatment for many months or even more than a year before he sees benefit. Results can be obtained in most cases even as bad as his by long persistence.

If his basal metabolism is normal or low, thyroid gland extract can be given in appropriate dosage, which can be expected to counteract the tired feeling and chilly sensations. Hydrotherapy can be employed, hot baths followed by baths as cold as he is able to stand, the cold being increased as the patient's response increases. Salt may be added for increased stimulation. Cod liver oil, iron and strychnine may be employed as indicated. General ultraviolet ray exposures may also be used.

Locally, ultraviolet rays in strong dosage to small areas of the scalp, best with the water-cooled quartz mercury vapor arc lamp, may be used. An erythema followed by exfoliation should be obtained from each treatment, and they should follow one another as soon as exfoliation has taken place, the intensity being increased as needed. If this source of radiation is not available, chemical stimulation can be used. The simplest is the application several times a day of stronger ammonia water, which gives good results in some cases. It should be applied after washing the scalp with hot water and soap, which is a good preparation for any local application. Acetic acid is used in the same way, applied once every fourth or fifth day, depending on the strength of reaction. This and the still stronger medicaments should be applied by the physician and used only over limited areas, the stronger the application the smaller being the area. Tricresol, diluted with alcohol to 25 per cent, the strength increased as the weaker solution fails to cause sufficient response, may be used, or phenol in the same way. A solution containing equal parts of tincture of iodine, phenol and chloral hydrate may also be efficient. One medicament should be used until the scalp acquires resistance to it and then should be changed for another. Turpentine, kerosene, chrysarobin and even croton oil are recommended. The latter must be used with great caution, for it can destroy the hair follicles. Chrysarobin on the scalp often is carried to the eyes and causes severe conjunctivitis, which possibly can be avoided by applying it in collodion. With all methods, the eccentricity of the disease must be remembered. It can refuse to yield for a long time, whereupon a slight growth of hair is suddenly seen. When this occurs, local and general measures must be kept up until the hair is full grown, and the case watched for months after this. One of the most important parts of the treatment is encouragement of the patient to keep up treatment in spite of the long failure to see results.

FOREIGN PROTEIN THERAPY IN PSORIASIS

To the Editor:—I have heard of the treatment of generalized psoriasis by intravenous typhoid bacterin injections, as used sometimes in treating arthritis. Can you tell me how successful this is? Is there any newer or better treatment of this disease than is outlined in the textbooks? Please omit name.

M.D., Missouri.

ANSWER.—Foreign protein therapy has long been used with benefit in stubborn cases of psoriasis. It alone will not clear up the eruption but will often render the case amenable to local therapy to which it was previously resistant. The mildest form of such therapy is injection, intramuscularly, of the patient's own blood. This is extolled by some dermatologists as more effective than intravenous injection of typhoid vaccine. From 5 to 20 cc. of blood is drawn from the vein and immediately injected into the gluteal muscles in the upper outer quadrant of the buttock. The treatment is given every fifth day and continued for from five to twenty times. It sometimes causes a mild febrile reaction. Other mild forms of foreign protein therapy are the intramuscular injection of sterile milk preparations and hypodermic injections of vaccines. Some authorities praise the action of vaccines made from the organisms isolated from the patient's stool, testing out the various vaccines and using for treatment those which cause a reaction in the patient's skin.

For intravenous injection, typhoid vaccine should be used because its reactions are controllable. Enough to cause a definite but not severe reaction should be given. In conjunction with this, as with the milder forms, local therapy must be used. Crude coal tar ointment and neorobin are cleaner than chrysarobin and as effective in most cases. With any local application, the mildest that will be effective should be used. A hot bath before application of the ointment is helpful. Grindon reports the clearing of psoriasis in some cases by the use of two hot sodium bicarbonate baths daily, a half pound of the soda being used to the bath and the patient remaining in the hot water for an hour each time.

The combination of ultraviolet radiation and crude coal tar ointment suggested by Goeckerman is perhaps the most popular method of treatment among dermatologists at the present time. The ointment used by him was that recommended by C. J. White: crude coal tar, 2 Gm.; zinc oxide, 2 Gm.; corn starch, 16 Gm., and sufficient petrolatum to make 32 Gm. This must be made by mixing the first two ingredients, then the last two, and then mixing the two mixtures, making a black ointment. After a hot bath at night, this is rubbed well into all the lesions. The next day, before the ultraviolet ray treatment, it is largely removed with olive oil, leaving a light film on the lesions. This film is in some way activated by the irradiation, so that its effect on the psoriasis is enhanced. After

the treatment the patient may take a bath and remain free from ointment until before retiring, when he applies it again, preparatory to the same program for the next day. This treatment is best given in the hospital but can be modified for ambulatory patients. If the patient cannot leave the ointment on his skin during the daytime, a thin film may be applied just before the ultraviolet treatment. Treatments are given as frequently as the circumstances of the patient permit. If spots of coal tar ointment get on the clothing, they should not be washed with soap and water but should first be wet with oil or kerosene for several hours, after which they can be washed out.

USE OF CONVALESCENT MEASLES SERUM

To the Editor:—Will you please let me know the therapeutic value of intramuscular whole blood injections in the treatment of measles, using the blood of a parent who has had the disease some time before. I should also like to find out the technic of these injections and the amount of blood usually injected. Please omit name.

M.D., Ohio.

ANSWER.—Generally speaking, convalescent measles serum injected intramuscularly within four days after exposure will prevent measles in by far most of the cases. When the seventh day of the incubation period has passed protection is uncertain, and after the eighth day or later practically no protection results. The dosage may be summarized as follows: In a child of three years or under, 5 cc. of serum should be injected intramuscularly if within four days after exposure; in older children, about 2 cc. more of serum should be given for each additional year; in children over 6 years of age, the dose should be at least 10 cc. If the injection is not given until the fifth day after exposure, the dose should be 10 cc. for a child of 3 or under and from 15 to 20 cc. for older children. If the serum of a parent or other adult is used the dose given should be larger, and if whole blood is injected the dose should be still larger. The injections are given into large muscular masses, such as those in the buttock or on the outer side of the thigh. There is no special technic except that aseptic precautions must be observed closely. If whole blood is injected the injection should be made immediately on withdrawal of the blood before coagulation takes place or else the blood must be citrated (add 1 per cent of sodium citrate).

PAINS IN BACK AND LEGS RELATED TO CANCER OR MENSTRUATION

To the Editor:—A woman, aged 50, had a partial thyroidectomy eight years ago. The left breast was amputated two years ago for advanced carcinoma; high voltage roentgen therapy was administered and there has been no local recurrence. There is a history of long standing pain in the back and stiffness of the legs, which became acute about a year previous to her last operation and has continued at intervals to date. Since last May, when I first saw the patient, she has had four attacks, each lasting a week or two, of excruciating pain in the back and both legs, but principally in the right leg. The pain terminates suddenly and almost completely at the onset of menstruation. During these attacks, rather large doses of morphine are required to give the patient relief. During the intermenstrual period, sometimes lasting two or three months, the patient is aproximately as she has been for years. Do these marked remissions rule out metastases to the bones of the pelvis as the cause of the pain? Irrespective of the cause, would you advise irradiation of the ovaries to bring about a cessation of menstruation? I have had roentgenograms taken last spring and again recently. They have been read as showing metastases to the pelvis, but I cannot be absolutely convinced that the rarefied areas are not due to intestinal gas. It seems almost inconceivable to me that such complete remissions would occur if there were advanced metastases present. Please omit my name and city.

M.D., Kansas.

ANSWER.—Since the attacks of pain in the back and legs became acute about one year before the breast was amputated, there is most likely no relationship between the pain and the carcinoma in the breast. If the pain was due to metastases in the pelvic bones and the present pain is of the same character, it is certain that the bones after three years would show pronounced changes, which could be detected readily. There is surely no indication to stop the menstrual flow by radiation therapy, because, according to the history, the attacks of pain cease almost entirely with the onset of menstruation. Hence the patient obtains relief at the time of the menses. Remissions do not necessarily rule out metastases to the bones of the pelvis. Judging from the history of the case, if bone metastases can be ruled out, relief from the severe pain can most likely be obtained by performing a pelvic sympathectomy. This operation, which consists of the removal of the so-called presacral nerve or superior hypogastric plexus, was recently described by J. P. Greenhill and H. E. Schmitz (THE JOURNAL, July 1, 1933, p. 26).

CLIMATIC TREATMENT OF BRONCHIECTASIS

To the Editor:—I would appreciate having a list of locations suitable for sending a patient with bronchiectasis. Would southwestern Texas offer such a person any relief?

M.D., Indiana.

ANSWER.—Climatic treatment of patients with bronchiectasis serves a useful purpose; however, it should not supplant other more direct measures of management which are frequently indicated. Of these the relief, if possible, of patients with infections of the upper respiratory tract, especially sinusitis, is important, together with the prompt removal of foreign bodies from the trachea and bronchi, and of organic obstructions of these structures, the recognition and treatment of pulmonary disease such as chronic bronchitis, lung abscess, pneumonoconiosis and asthma, and the persistent employment of postural drainage when it is effective in removing fluid accumulations. A bronchoscopic examination is desirable in all cases. Cultures of the material obtained by way of the bronchoscope should be taken and an autogenous vaccine made and used cautiously. All general measures designed to improve the general health of the patient should be employed. Of these rest, fresh air, adequate sleep and a nourishing diet are important. Under proper conditions climatic treatment may prove of accessory value in improving the general health of the patient and may prevent or minimize recurrent infection of the upper respiratory tract. A dry climate at a moderate elevation is desirable and may be found in almost any part of southwestern Texas and also at Phoenix and Tucson, Ariz., and Taos, N. M. The mistake should not be made of sending a patient to the Southwest or to any other section of the country without first arranging with a responsible and competent physician in the locality who will assume medical responsibility for the patient.

CATECHIN IN GOITER

To the Editor:—Can you tell me something about the use of a product called "catechin" in the treatment of exophthalmic goiter?

M.D., Connecticut.

ANSWER.—The expression "catechin" has lately been applied to a somewhat indefinite group of substances alleged to be antagonists to certain hormones in the body. According to a German report (Catechins, Newly Discovered Substances in the Blood, Berlin letter, THE JOURNAL, Jan. 7, 1933, p. 55) the term "catechin" is derived from a Greek word signifying "to keep within bounds." The catechins are not substances that accidentally influence the action of a hormone but rather active substances whose special province, as it were, is to prevent excessive effects of hormones or to modify their action. German investigators, notably Blum of Frankfort-on-Main, have long claimed that the blood contains substances that are antithyroidal in character. Blum believes that he has isolated such a product that is always found in the blood stream in large quantities, serving thus as a watchman for the thyroid gland, or, in other words, being a genuine "catechin." The studies have scarcely passed the earliest experimental stage.

It is unfortunate that the word "catechin" has been coined anew in the sense referred to. Gambir, or pale catechin, is described in the U. S. Pharmacopeia. Catechin has long been known to organic chemists as a product related to the tannins. It is a white crystalline substance of known structure, the principal constituent of gambir, a tannin material found in Sumatra (Holleman, A. F.: A Text-Book of Organic Chemistry, New York, John Wiley & Sons, Inc., 1925). The structural formula of catechin is given in Meyer and Jacobson's Lehrbuch der organischen Chemie, volume 2, part 3, page 91. When catechin is heated it becomes changed to the well known pyrocatechin.

TREATMENT OF SYPHILIS

To the Editor:—I am treating a woman patient for syphilis (early secondary) and have given her seven intravenous injections of neoarsphenamine, 0.6 Gm., and am planning to start giving either bismuth or mercury compounds with the eighth dose of arsenic. Which, if either, is the more satisfactory? If mercury, what preparation and how much for each treatment and how applied? If bismuth, what preparation and how much? Is biliposol a satisfactory product for this purpose? Would it be well to give more arsenic for the first course? The patient is 30 years old and weighs 110 pounds (50 Kg.). Please omit name.

M.D., North Dakota.

ANSWER.—The dosage of neoarsphenamine, 0.6 Gm., is probably too large, especially for a woman weighing but 110 pounds (50 Kg.). It is to be recommended that the dose be reduced to 0.45 Gm., and that it be continued until she has received a total of ten injections. With the last injection of neoarsphenamine, the first injection of bismuth should be given. For this purpose one may employ intramuscular injections of potas-

sium bismuth tartrate suspension in oil, given intramuscularly, 100 mg. once a week. Or bismocymol, 100 mg., once a week; that is, of the metallic bismuth. Or the biliposol, 80 mg. of metallic bismuth, once a week. These injections should be continued for a course of ten treatments. The bismuth course should then be followed by another course of ten injections of neoarsphenamine, 0.45 Gm., given once a week. Here again, at the end of this course of neoarsphenamine, a succeeding course of bismuth is to be recommended, and since this is an early case of secondary syphilis, with the disease well generalized, it probably would be well to follow it with still a third course of arsenical injections. A specimen of blood should be taken at the beginning of each course of treatment. Treatment should be continuous, with no rest periods between the courses, and it would be well to have a lumbar puncture done within six months to make sure that there is no involvement of the central nervous system. Naturally a patient that is under therapy with heavy metals like arsenic and bismuth should be watched closely for symptoms of intolerance, and the urine should be checked at each visit. Whether further therapy should be employed after the treatment outlined would depend on the serologic tests. If the Wassermann returns to a negative reaction and remains so, it is questionable whether further treatment would be needed. On the other hand, if they still continue to show a positive reaction, it would be well to follow the last course of arsenicals with perhaps a course of mercuric salicylate injections, 0.1 Gm. intramuscularly once a week. Or, if the patient prefers, a course of mercury inunctions of fifty or sixty rubs. Any patient that has had treatment for syphilis, after the Wassermann reaction has become negative, and after such course of treatment has been completed, should be kept under observation and examined regularly for a period of years.

CYST OF OVARY

To the Editor:—A woman, aged 50, married twenty-eight years, never was pregnant or seriously ill, and gives a history of no operative work. Her menses began when she was 17 years old; they were never regular until she married; since then they have come on time, the last flow occurring Jan. 16, 1934. There is no leukorrhea. The patient states that she has always felt well. About a month ago, while in bed, her husband put his arm round her waist and pulled her toward him suddenly and forcefully. She felt a "snap" in her right side over the lower edge of the liver; there was some pain; this gradually became worse and then subsided. About a week later the patient noticed that her abdomen was getting bigger and harder and that her breathing was rather labored. She is unable to lie on her right side. General examination reveals nothing abnormal save the presence of a great amount of fluid in the abdomen. The latter is hard and shiny. Examination of the urine is negative. The blood pressure is 144 systolic, 92 diastolic. The heart is normal save for a very slight and very soft systolic murmur. The lungs are absolutely normal. Am I justified in recommending that the abdomen be tapped so that a more complete and thorough examination can be made? Is it logical to suspect a malignant condition in a case in which no pain, no illness of any kind, no loss of weight nor any of the elementary symptoms of a suspected malignant condition are or were manifested? I took a Wassermann test but have as yet received no reply. Kindly omit name.

M.D., Connecticut.

ANSWER.—The history is suggestive of traumatic rupture of a thin-walled cyst or of a cystic mass with a thin area in one wall. The most common type of cyst in such a patient is one that arises in the ovary. The presence of free fluid in the abdomen does not necessarily indicate a malignant condition. It may represent fluid that was liberated when the cyst was ruptured and, in addition, fluid that was being produced by the cells lining the cyst wall. Even if a large part of the fluid arises in the peritoneum, the cyst is not of necessity malignant, although most of these cases are malignant. On the other hand, the absence of ill health, loss of weight and pain do not rule out a malignant disease. It is far better to perform a laparotomy than to tap the abdomen, because the former procedure will reveal the true diagnosis and will enable the operator to remove any abnormality that is found. In a large proportion of women with ascites, papillomatous cysts of the ovaries are found. Even though most of these cysts are malignant and all give a malignant appearance, some are distinctly benign. Hence, when papillomatous tumors of the ovaries are found, a radical operation should be performed and the uterus, tubes and both ovaries should be removed. When it is technically impossible to remove all these organs, as much of the papillomatous tissue as possible should be taken out. Sometimes a cure follows such an incomplete operation. All removed tissue should, of course, be examined microscopically, although sometimes it is difficult to tell whether such tissue is malignant or benign. If it proves to be carcinomatous, it is best to follow the operation with radiation therapy. There is a high incidence of recurrence in cases of papillary tumors of the ovaries.

CHRONIC MALARIAL SPLEEN

To the Editor:—Mrs. R. E., a white woman about 28 years of age, a housewife, became pregnant late in 1932. The family and personal history are negative except for malarial fever at intervals during 1932, the fever being present every other day during the attacks. Irregular doses of quinine were administered during the entire year. Exacerbations of malaria occurred during the entire pregnancy and were treated irregularly by another doctor. The patient consulted me in June, 1933, when she was about eight months pregnant. She was anemic in appearance and had a large, rather soft, palpable mass and corresponding dulness to percussion filling most of the left side of abdomen; fever occurred every other day. The signs were interpreted as representing an enlarged spleen due to chronic malaria. Intensive quinine therapy together with dilute hydrochloric acid and small doses of solution of potassium arsenite and in addition a tonic were instituted. About a month later the patient delivered a healthy normal infant. In spite of continued quinine therapy, arsenicals orally and intravenously (solution of potassium arsenite orally and sodium cacodylate intravenously in ascending doses, finally reaching 0.5 Gm. at a dose), plasmochin, bed rest, and iron and ammonium citrate, the spleen remains about 4 cm. inferior to the left costal margin and at times enlarges to fill half of the left side of the abdomen. For two months following delivery the patient had rather severe uterorrhagia and menorrhagia controlled by ergotrate and by calcium lactate. This was probably due to anemia (the hemoglobin was from 40 to 50 per cent) and is now much improved. The chief problems I have in mind are whether there would be any justification for splenectomy, the danger of rupture of the spleen or hemorrhage into the spleen if left alone, and how the patient may be helped back to better health—she still has occasional attacks of fever on alternate days. Please omit name and address.

M.D., South Carolina.

ANSWER.—The clinical features recorded apparently justify the classification of this case as one of chronic malarial spleen, of relatively mild degree. Malarial infections of the spleen, as seen in most of the United States, are different from those seen in countries in which malaria is prevalent. Although the spleen has been removed in a number of cases, splenectomy under such circumstances indicated rather clearly that it is associated with a higher mortality than is splenectomy for any other disease. Removal of the spleen, therefore, becomes advisable only when the spleen is so large that symptoms are definitely referable to its size. As Pool and Stillman have pointed out in discussing malaria and splenomegaly, "the disease is not located exclusively in the spleen nor is that organ an incubator for the malarial parasite; therefore the removal of the chronic malarial spleen will not bring about a cure of the infection."

It would seem advisable in this case to carry out routine measures to meet such conditions as exist. Treatment for the anemia should be instituted. Quinine should be given over a sufficient length of time. If regression of the spleen does not take place, consideration should be given to irradiation of the spleen. The possibility of rupture unquestionably is greater in the malarial spleen than in any other form of splenomegaly because of the character of the enlargement, and every reasonable caution should be taken against direct or indirect injury.

EFFECTS OF INJURY ON PREGNANT WOMAN AND ON UNBORN CHILD

To the Editor:—A woman, aged 42, sustained an abdominal injury during the seventh month of her pregnancy. All the other children were born normal and have remained so. The mother had no miscarriages or abortions. The child was delivered at full term. Several months later this child evidenced signs of mental deficiency with lack of speech and otherwise failed to react as normal children do. Kindly let me know whether it is possible for the child to have sustained an intra-uterine cerebral injury resulting in its present condition, of other cases on record, and literature on the subject to which you can refer me.

LOUIS K. MORGANSTEIN, M.D., Bayonne, N. J.

ANSWER.—While it is possible for injury during pregnancy to produce symptoms such as are described in this case, it is difficult to prove that there is a causal relationship between the injury and the child's mental retardation. Women have frequently received severe injuries to the abdomen during gestatation and practically all the children born afterward have been normal. Even interruption of pregnancy by abdominal injury is uncommon and damage to the child is infrequent except in the cases of abruptio placentae and rupture of the uterus that sometimes follow trauma. The fetus lies in a sac of water, which protects it from direct injury. However, cases have been reported in the literature in which trauma to the mother was held responsible for various defects and abnormalities found in the child after birth. Most of the injuries to these children were broken bones, but in a large proportion of these cases the bony defects were not due directly to the trauma but to a predisposition to bone disturbances. Cases of intracranial hemorrhage have been ascribed to abdominal injury to the mother during pregnancy. One such case was reported by Fink (*Monatschr. f. Geburtsh. u. Gynäk.* **50**:264 [Dec.]

1922), who also mentions the case described by Seitz in which old cerebral hemorrhage was found in a child who was born alive of a woman who had had an abdominal injury. A discussion of the subject of trauma during pregnancy and its effects on the fetus may be found in the article by A. S. Hammerschlag "Trauma und Operation, bei Schwangerschaft" in Halban-Seitz's Biologie und Pathologie des Weibes **8**:957, 1927.

It must be remembered that occasionally a woman over 40 years of age, especially one who has had a large number of children, gives birth to an abnormal child. The usual type of defect in such cases is mongolian idiocy. Regardless of this, a backward child may be born to almost any type of parent. Furthermore, the child may show mental deficiency at the present time but its development may speed up later so that it will become as normal as other children.

BLOOD IN SPINAL FLUID

To the Editor:—A boy, aged 7, previously healthy, suffered from constipation for four or five days and failed to get results from cathartics or enemas. I found the child in an extremely nervous condition, with general body twitchings. Temperature and pulse were normal. There was no abdominal tenderness or rigidity. I could not elicit any peristalsis whatever. The child complained only of difficulty in swallowing and a sensation of having something in his throat which made him cough. The pupils were equal and reacted to light and in accommodation. A preliminary diagnosis of paralytic ileus was made. He became progressively worse until three hours later the pupils were contracted and did not react to light and there was slight rigidity of the neck. Other physical signs were absent. It was decided to do a spinal puncture, but while the nurse was preparing the suitable needles the patient died. Immediately after death a lumbar puncture was done and with a syringe, 30 cc. of practically pure blood was withdrawn from the spinal canal. This was apparently under considerable pressure. Cultures did not yield any bacteria. There was no past history of an injury to cause this hemorrhage. I have not been able to find in any of the literature reports of massive hemorrhage in the spinal canal except that which is due to trauma. I am desirous of knowing what conditions might cause such massive hemorrhage other than trauma. Please omit name.

M.D., Pennsylvania.

ANSWER.—Pure blood may occur in the spinal fluid in cases of cerebral aneurysm. Necropsy in these cases discloses ruptured aneurysm of the circle of Willis. Such central lesions are usually associated with fever and occur as a rule in elderly persons. It has nevertheless been found that cerebral aneurysm may be congenital in origin or may be the sequel of an infectious embolus; multiple cerebral emboli may result as complications of subacute bacterial endocarditis.

Blood may pour into the spinal fluid if an apoplexy has taken place, particularly if the vessel has ruptured into the lateral ventricles.

The fluid may be blood tinged in fracture of the skull if meningeal hemorrhage has occurred.

It should not be forgotten that there is a plexus of veins on the posterior wall of the body of the vertebra. If these are punctured, a bloody fluid will be obtained.

It is unfortunate that a necropsy was not obtained in this case to permit a more accurate appraisal of the condition of the organs, so as to ascertain the definite cause of death.

EFFECTS OF GLYCINE ON MYOCARDITIS

To the Editor:—The feeding of glycine or glycocoll (an amino acid) in the several muscular dystrophies, particularly myasthenia gravis, appears to be fraught with a good deal of success, as manifested by the improvement in muscular tone and strength of those afflicted with these mysterious maladies of muscle nutrition. Would it not be possible to improve the nutrition of the heart muscle by such feedings of glycine in those afflicted with myocarditis? Of course the skeletal muscles are under a different kind of nervous control; probably the chemical structure of the myocardium is different from that of the skeletal groups. Is it known that the vagus has trophic functions? Are there known chemical or physiologic reasons why feeding glycine would be ineffective in myocarditis? It seems that it might be tried without jeopardizing the functions of a diseased malnourished heart.

M.D., Pennsylvania.

ANSWER.—There are no known physiologic reasons why feeding glycine should be effective in the treatment of myocarditis, especially when one considers that myocarditis is generally considered to be due to anatomic changes in the muscle itself and not secondary to pathologic or impaired function of its extrinsic nervous mechanism. Furthermore, there is no experimental evidence to show that the vagus nerves carry trophic impulses. In the experimental animal, double vagotomy does not lead to changes in the cardiac musculature as seen in skeletal muscle deprived of its efferent nerve supply.

It should be understood that the muscular dystrophies may be primarily of central origin, particularly myasthenia gravis. In some unpublished work on myasthenia gravis by Luckhardt and Johnson, it was found by knee jerk experiments that following injections of ephedrine (which is a powerful central nervous system stimulant) there was a marked and progressive increase in the knee jerk and this was associated with marked clinical improvement. This bit of evidence suggests that myasthenia gravis may be primarily of central origin.

Furthermore, the heart muscle is not generally involved in the muscular dystrophy except as secondary to the general malnutrition of the body.

"NAPHTHA JAG"

To the Editor:—I have a patient, a man aged 42, who on Saturday, January 20, used Clix Chromium Cleaner and Noble's Cleaner on his car for a period of two and one-half hours in a small garage with the doors shut and no ventilation. About two hours afterward he developed an unsteadiness of gait and the next morning he was unable to stand alone. Examination was negative, except for apparent severe cerebellar disturbances. As long as he lay quiet and did not turn his head he felt perfectly normal, except for a lightness in his head. If he tried to rise up or turn his head from side to side he immediately became very dizzy and would feel that he was falling. When he attempted to stand up and walk he could not even stagger across the room holding on to fixed objects. This condition has improved and now he can walk across the room with some assurance if he stays close to a fixed object, although his gait is distinctly ataxic. There seems to be nothing else in his history that would account for this nerve involvement. He tells me that in using the cleaners he found that one of them, called Clix, seemed to dry too quickly and he could not rub it off, so he took gasoline to remove the residue of the cleaner.

HOWARD B. GOODRICH, M.D., Hannibal, Mo.

ANSWER.—No exact information is available as to the specific content of the two cleaners mentioned. It is, however, possible to account for the condition described from a knowledge of the toxicity of gasoline. All gasoline, naphthas, Stoddard's solvent and the like are toxic, and gasoline, being more readily evaporated, is more toxic than those others with higher boiling points. The acute condition produced is commonly termed a "naphtha jag." In addition to cerebellar involvement it is not unusual for higher centers to be involved. A few persons become sensitized to the action of these petroleum derivatives and thus readily respond to trivial reexposures. From the fact that this work was carried out in a small garage with no ventilation, together with the fact that a large surface from which evaporation took place was provided, it is believed that a practical hazard to acute gasoline poisoning existed. The possibility of carbon monoxide poisoning should be ruled out by further inquiry. Should it still be felt that a need exists for an analysis of the two cleaners mentioned, information as to sources of such services will be provided on supplemental inquiry.

ANGIONEUROTIC EDEMA, OR QUINCKE'S DISEASE

To the Editor:—A woman, aged 24, weighing 150 pounds (68 Kg.), married five years, sterile, had menorrhagia of three years' duration, for which she has been treated by radium, curettage and glandular therapy without relief, so that finally she had a hysterectomy. She has had endocrine symptoms for the last five years, for which she is now on gland therapy. She now complains of frequent attacks of puffiness in the neck anteriorly and extending laterally in the supraclavicular fossa. These lateral swellings are about the size of an egg, have the consistency of cotton, and do not pit on pressure; there is no pulsation, crepitus or bruit. The condition comes on suddenly and may last from a day to a week, during which time the patient is extremely nervous. It then disappears as suddenly as it came. I should like to know the cause and the treatment. Kindly omit name.

M.D., Illinois.

ANSWER.—The condition described is most likely that previously known as angioneurotic edema but now more frequently called transient circumscribed edema or Quincke's disease. According to Maranon this condition, which is always transient, "seems to be due to a colloidoclastic disturbance, an anaphylaxis which brings it close to urticaria." In most cases the swellings are colorless or crimson, are hard, appear in different parts of the skin, and do not pit on pressure. After a variable length of time they disappear, without leaving any traces. However, after frequent recurrences, the swellings may persist. These lesions may or may not be accompanied by other manifestations. They may occur during the menstrual periods, but in most cases the important factor is a premature or physiologic ovarian insufficiency; hence these local adiposities are not rare during the menopause.

In the menopause and the premenopausal period there is also a fairly frequent occurrence of the condition known as "supraclavicular lipomas" and "supraclavicular pseudolipomas." These are symmetrical lipomas which deform the shoulder lines and are sometimes painful. In the latter instance they are regarded as indications of Dercum's syndrome. These painful swellings

are also more common after the menopause and castration than at other times. They often improve under ovarian therapy. However, in addition to ovarian insufficiency, other factors in this syndrome may be disturbed function of the hypophysis and thyroid as well as a nervous factor.

In the case cited it is advisable to administer such ovarian preparations as theelin and amniotin. If these substances do not give relief, it may be well to try anterior pituitary hormones.

BÖHLER SLING

To the Editor:—Kindly let me know what a Böhler sling is. In an excerpt from the *American Journal of Surgery* in THE JOURNAL, Nov. 4, 1933, page 1510, it says that utilization of the Böhler sling rendered unnecessary the use of casts, skeletal traction or open operation and that the patients can be treated at home as well as at the hospital. Where can I read of it and see a diagram of it?

HENRY F. CASSIDY, M.D., Baltimore.

ANSWER.—The Braun-Böhler splint is illustrated in a book entitled "Treatment of Fractures," translated by M. E. Steinberg and published by Wilhelm Maudrich of Vienna in 1929. It is also illustrated in an article by A. B. Illievitz, published in the *American Journal of Surgery* (**21**:21 [July] 1933).

CEREBRAL ARTERY MOST FREQUENTLY INVOLVED IN CEREBRAL HEMORRHAGE

To the Editor:—Please tell me which one of the arteries ruptures most commonly in cerebral hemorrhage (apoplexy), as I have read some differences of opinion on the subject.

THOMAS GAERSTE, Curaçao, Dutch West Indies.

ANSWER.—The artery from which bleeding occurs most frequently in cerebral hemorrhage is the lenticulostriate artery, which arises from the anterolateral ganglionic branches of the middle cerebral. The lenticulostriate artery was called by Charcot the artery of cerebral hemorrhage. It runs between the lenticular nucleus and the external capsule and ends in the caudate nucleus.

CHORDEE AFTER GONORRHEA

To the Editor:—A man, aged 38, had an attack of acute gonorrhea, two years ago, which cleared up under treatment in two months. Since then he has complained of impotence and chordee. Physical examination is negative. The prostate is normal, slides are normal, and there are no strictures. He has received bromides and cacodylates to no avail. What treatment would you recommend? Please omit name.

M.D., Washington.

ANSWER.—Chordee persisting so long after an acute attack is due either to a submucous infiltration or to some damage to one or more cavernous sinuses. Dilation with large sounds may improve this. Medical diathermy may also be tried. The impotence is in all probability a temporary condition.

NUMBNESS OF ARM AND HAND

To the Editor:—In Queries and Minor Notes (THE JOURNAL, February 3, p. 395) a physician of Washington asks for an idea as to diagnosis for numbness of the left arm and hand. The brachial plexus and nerves derived from it, especially the musculospiral nerve, are liable to injury incident to their situation. The great mobility of the bones of the arm and shoulder permits a number of extreme postures, which are capable of causing great injury to the nerves. A great many cases of brachial neuritis could be prevented if the possibility of their occurrence were generally known. One of the common and easily avoidable causes seen nowadays is the faulty position of the left arm in automobile driving. The left arm is raised, with the elbow resting on the open window of the door, whereby not only is the arm subject to the wind and draft but the uplifted arm stretches the plexus, setting up a neuritis of the musculospiral nerve. Or the shoulder joint, from fatigue and relaxation of the muscles that normally held it backward and upward, sags downward and forward, and the head of the humerus may compress the ulnar nerve against the second rib, causing a true pressure neuritis. In thin persons the ulnar nerve alone may be affected, but in stouter patients a padding of fat may transmit the pressure to the whole plexus. I have not seen this particular form of neuritis described in the literature or in text books. As good a term as any would be "driver's arm."

R. DE R. BARONDES, M.D., San Francisco.

TREATMENT OF VINCENT'S INFECTION OF THE MOUTH

To the Editor:—On page 639 of the February 24 issue of THE JOURNAL you have presented an answer to an inquiry on Vincent's infection of the mouth which seems to me to be the most sane exposition on the treatment of this acute condition that I have seen. I am especially impressed with your last paragraph in regard to the uncalled for and, incidentally, dangerous treatment of this disease with organic arsenicals, which I have strongly opposed ever since these chemicals were recommended for this purpose; i. e., about 1919.

HERMANN PRINZ, D.D.S., M.D., Philadelphia.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Examinations will be held in various cities, April 30. *Oral.* Cleveland, June 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates).* The examinations will be held in various cities of the United States and Canada, April 7. *Oral* (all candidates), Cleveland, June 12. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Cleveland, June 11 and Butte, Mont., July 16. *Application must be filed at least 60 days prior to date of examination.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cleveland, June 11. Sec., Dr. W. P. Wherry, 1300 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science.* Little Rock, May 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, May 14-15. Sec., Dr. A. S. Buchanan, Prescott. *Homeopathic.* Little Rock, May 8. Sec., Dr. Allison A. Pringle, Eureka Springs. *Eclectic.* Little Rock, May 8. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock.

COLORADO: Denver, April 3. Sec., Dr. William Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Endorsement.* Hartford, March 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

IDAHO: Boise, April 3. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, April 10-12. Supt. of Regis., Dept. of Regis. and Edu., Mr. Eugene R. Schwartz, Springfield.

MINNESOTA: *Basic Science.* Minneapolis, April 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 17-19. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, May 7-9 (limited to a few centers), June 25-27, and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, May 1-2. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, May 7. Sec., Dr. Edward E. Hamer, Carson City.

NEW MEXICO: Santa Fe, April 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

RHODE ISLAND: Providence, April 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, March 26-27. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WISCONSIN: *Reciprocity.* Milwaukee, April 5. Sec., Dr. Robert E. Flynn, 401 Main Street, LaCrosse.

New York September Examination

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held by the Board of Medical Examiners of the State of New York at Albany, Buffalo, New York and Syracuse, Sept. 25-28, 1933. The examination covered 9 subjects. An average of 75 per cent was required to pass. Two hundred and six candidates were examined, 156 of whom passed and 50 failed. The following schools were represented:

School	Year Grad.	Number Passed
PASSED		
College of Medical Evangelists	(1932)	1
Yale University School of Medicine	(1930), (1931)	2
George Washington Univ. School of Med.	(1932, 2) (1933, 4)	6
Georgetown Univ. School of Med.	(1928), (1932, 2), (1933, 5)	8
Loyola University School of Medicine	(1933, 2)	2
Northwestern University Medical School	(1930)	1
Rush Medical College	(1933, 3)*	3
Univ. of Louisville School of Medicine	(1926), (1928), (1933)	3
Tulane University of Louisiana School of Medicine	(1933, 3)	3
Johns Hopkins University School of Medicine	(1931)	1
University of Maryland School of Medicine		
of Physicians and Surgeons	(1932), (1933)	2
Boston University School of Medicine	(1932), (1933, 2)	3
Harvard University Medical School	(1930)	1
Tufts College Medical School	(1931), (1932, 2), (1933)	4
University of Michigan Medical School	(1929), (1931), (1933)	3
St. Louis Univ. School of Medicine	(1924), (1932), (1933, 2)	4
Creighton University School of Medicine	(1930), (1933, 4)	5
Albany Medical College	(1933)	1
Columbia University College of Physicians and Surgeons	(1931), (1932, 2), (1933, 8)	11
Cornell University Medical College	(1927), (1933)	2
Long Island College of Med.	(1931, 2), (1932, 3), (1933, 2)	7
New York Homeopathic Medical College and Flower Hospital	(1932, 2), (1933, 9)	11
New York University, University and Bellevue Hospital Medical College	(1932, 2), (1933, 7)	9
Syracuse University College of Medicine	(1932), (1933, 6)	7
University of Buffalo School of Medicine	(1932, 2), (1933, 5)	7
University of Rochester School of Medicine	(1932), (1933)	2
Hahnemann Medical College and Hosp. of Philadelphia	(1932)	1

Jefferson Medical College of Philadelphia	(1933)	1
Medical College of the State of South Carolina	(1932)	1
Meharry Medical College	(1933)	1
Vanderbilt University School of Medicine	(1932)	1
University of Vermont College of Medicine	(1932)	1
Medical College of Virginia	(1930)	1
University of Virginia Department of Medicine	(1933)	1
University of Manitoba Faculty of Medicine	(1929)	1
Queen's Univ. Faculty of Medicine	(1930), (1931), (1932)	3
University of Toronto Faculty of Medicine	(1930, 2)	2
Laval University Faculty of Medicine	(1931)	1
McGill University Faculty of Medicine	(1927), (1933)	2
Medizinische Fakultät der Universität Wien	(1928),† (1932)†	2
Deutsche Universität Medizinische Fakultät, Czechoslovakia	(1932)†	1
University of London Faculty of Medicine	(1933)†	1
Université de Paris Faculté de Medecine	(1933)†	1
University College, Dublin, National Univ. of Ireland	(1933)†	1
University of Aberdeen Faculty of Medicine, Scotland	(1905)	1
Univ. of Edinburgh Faculty of Med.	(1930), (1931), (1933)†	3
University of St. Andrews Conjoint Medical School, Scotland	(1932), (1933, 3), (1933, 10)†	14
Osteopaths		6

School	FAILED	Year Grad.	Number Failed
University of Arkansas School of Medicine		(1933)	1
George Washington University School of Medicine		(1933)	1
Georgetown University School of Medicine		(1930), (1931), (1932, 2), (1933)	5
Howard University College of Medicine		(1932)	1
University of Georgia School of Medicine		(1930)	1
Loyola University School of Medicine		(1933)	1
University of Louisville School of Medicine		(1933)	1
Tulane University of Louisiana School of Medicine		(1922)	1
Boston University School of Medicine		(1932), (1933)	2
St. Louis University School of Medicine		(1930)	1
Creighton University School of Medicine		(1933)	1
Long Island College of Medicine		(1931)	1
New York Homeopathic Medical College and Flower Hospital		(1928), (1933)	2
University of Buffalo School of Medicine		(1930), (1933, 4)	5
Hahnemann Medical College and Hospital of Philadelphia		(1929), (1932)	2
Temple Univ. School of Medicine		(1931), (1932, 2), (1933, 2)	5
Meharry Medical College		(1933)	1
McGill University Faculty of Medicine		(1933)	1
Medizinische Fakultät der Universität Wien		(1926), (1932)†	2
Deutsche Universität Medizinische Fakultät, Czechoslovakia		(1925), (1929)	2
University of Sheffield Faculty of Medicine, England		(1933)†	1
Albert-Ludwigs-Universität Medizinische Fakultät, Germany		(1930)	1
Regia Università di Napoli. Facoltà di Medicina e Chirurgia		(1925),† (1929), (1931),† (1932)†	4
Regia Università di Roma. Facoltà di Medicina e Chirurgia		(1931)	1
University of Saratov Faculty of Medicine, Russia		(1922)†	1
Licentiate of the Royal College of Physicians, Royal College of Surgeons, Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow		(1931)†	1
University of St. Andrews Conjoint Medical School		(1932)†	1
Osteopaths			3

Forty-one applicants were licensed by endorsement from November 1 to December 31. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1930)	N. B. M. Ex.
George Washington University School of Medicine		(1928)	New Jersey
Georgetown Univ. School of Medicine	(1928) D. C.	(1933)	Maryland
Howard Univ. College of Medicine	(1924) N. J., (1926, 2)		Virginia
Rush Medical College		(1924)	Illinois
Indiana University School of Medicine		(1933)	Indiana
State University of Iowa College of Medicine		(1931)	Iowa
Johns Hopkins Univ. School of Medicine	(1926), (1932)		Maryland
Harvard University Medical School		(1930)	N. B. M. Ex.
Tufts College Medical School		(1911)	Mass.
Detroit College of Medicine and Surgery		(1925)	Michigan
St. Louis Univ. School of Medicine	(1916) Mass., (1933)		California
Washington University School of Medicine		(1927)	N. B. M. Ex.
Creighton University School of Medicine		(1931)	California
Albany Medical College		(1931)	N. B. M. Ex.
Columbia University College of Physicians and Surgeons		(1931, (1932)	N. B. M. Ex.
University of Buffalo School of Medicine		(1932)	N. B. M. Ex.
University of Rochester School of Medicine		(1932)	N. B. M. Ex.
Jefferson Med. College of Philadelphia	(1902) Penna., (1931)		N. B. M. Ex.
Univ. of Pennsylvania School of Med.	(1913) Mich., (1927)		Penna.
Meharry Medical College		(1932)	Tennessee
University of Tennessee College of Medicine		(1928)	Tennessee
Vanderbilt Univ. School of Medicine	(1932) N. B. M. Ex., (1926) Minnesota		Tennessee
University of Virginia Department of Medicine		(1932)	Virginia
University of Toronto Faculty of Medicine		(1923)	Ontario,
Medizinische Fakultät der Universität Wien		(1918)†	Diploma
Medizinische Fakultät der Universität Leipzig		(1901)†	Germany
Regia Università di Roma. Facoltà di Medicina e Chirurgia		(1922)	Maryland,
University of St. Andrews Conjoint Medical School, Scotland		(1931)†	New Jersey
Osteopath		(1932)	Indiana
			New Jersey

* One of these applicants has received a four-year certificate and will receive an M.D. degree on completion of internship.

† Verification of graduation in process.

Book Notices

Food Products. By Henry C. Sherman, Ph.D., Sc.D., Mitchell Professor of Chemistry, Columbia University. Third edition. Cloth. Price, $3. Pp. 674, with 42 illustrations. New York: Macmillan Company, 1933.

This edition constitutes a complete rewriting of this well known book, furnishing subject matter for a broad general study of foods and the chief types of food products. The first and second chapters treat of the principal constituents and functions of foods and of the general aspects of food control. Chapters on each of the chief types of food follow. The last chapter treats of the best use of foods from the standpoint of nutrition and food economics. The production, preparation for market, statistical data, storage methods, questions of sanitation, inspection and standards of purity, general composition, mineral and vitamin content, digestibility, nutritive value and place in the diet are considered for each type of food. Lists of suggested readings are appended to each chapter. The appendix includes the Food and Drugs Act, excerpts from rules and regulations for its enforcement, the meat inspection law, excerpts from meat inspection regulations, and tables on the mineral elements and vitamins of foods. The book is of particular value to all interested in foods along chemical, economic, nutritional, sanitary or technological lines.

Report on an Investigation Into the Causes of Maternal Mortality in the City of Madras: Being a Report on the Investigation of 436 Maternal Deaths That Occurred During a Twelve-Month Period in the City of Madras. By A. L. Mudaliyar, M.D., F.C.O.G., Second Obstetric Physician and Gynecologist, Government Hospital for Women and Children, Madras. Paper. Price, 12 annas. Pp. 78. Madras: Government Press, 1933.

From a study of 26,207 births, including stillbirths, in Madras for parts of the years 1930 and 1931, twelve months in all, it was learned that there were 293 deaths from childbirth, a rate of 16.6 per thousand births. As stillbirths are included, these figures are not comparable with others, because the latter count only live births. The author admits that "the position with regard to mortality statistics" in the whole country "is beyond all hope of assessment." As usual, sepsis caused most of the deaths, 26.4 per cent; anemia caused 11.5 per cent and was a complication in many deaths from other causes; puerperal hemorrhages caused 12.7 per cent, and eclampsia and toxemias only 9.6 per cent of the deaths. In Madras there are five maternity institutions all doing good work. The infections occurring are ascribed to overcrowding. A review of the midwife situation, stressing its educational aspect, and a large roster of recommendations complete the interesting and instructive pamphlet. Prominent among the latter is the demand for a separate pavilion for septic cases and separate wards for clean and suspected cases and also for all abortions.

A City Set on a Hill: The Significance of the Health Demonstration at Syracuse, New York. By C.-E. A. Winslow, Dr.P.H., Professor of Public Health, Yale School of Medicine. Published for the Milbank Memorial Fund. Cloth. Price, $3. Pp. 367. Garden City: Doubleday, Doran & Company, Inc., 1934.

This is a history of the development of the city of Syracuse from its beginning down to the present day, with particular emphasis on development of health service in that city. As far as the present health service in Syracuse is concerned, the book represents an appraisal of health activities in 1931, according to the appraisal form for municipal health work developed by the Committee on Administrative Practice of the American Public Health Association. The author is also chairman of this committee. The appraisal form is recognized as a useful instrument for measuring public health work, but it has, in common with all agents of any considerable potency, certain disadvantages, which are fully recognized by its sponsors. It measures quantitative values in public health work. There is as yet no objective measure of quality in public health work. Published for the Milbank Memorial Fund, this volume naturally reflects the philosophy of that organization, which tends toward socialization of medical services and emphasis on governmental responsibility for health. The book is an able exposition of this philosophy. It is naturally to be expected that a demonstration under such sponsorship would proceed largely in disregard of the possibilities for cooperative relationships with the medical profession. The author records in a number

of instances cordial cooperation of the profession with the demonstration, but he also records the failure of diphtheria immunization when for one year it was turned over to the profession. This failure, as experience elsewhere shows, is evidence of a failure of cooperation. The Milbank Fund spent approximately three fourths of a million dollars in eight years demonstrating health administration to the citizens of Syracuse. Naturally, the expenditure of such sums brought large developments, many of which are admirable. The most serious objection to this demonstration, as to others, is that it has not visualized the opportunities for drawing into public health work the vast potential resources inherent in the medical practitioners in any community, this despite the fact that on page 204 the author says "a direct and tangible result of the public health program in its broad sense . . . must always include the practice of medicine and cooperation of an educated public as essential elements."

Die Psychoanalyse und der praktische Arzt. Von Dorian Feigenbaum. Vortrag gehalten zu Ehren von Prof. Sigm. Freuds 75. Geburtstag in der Deutschen Medizinischen Gesellschaft der Stadt New York am 4. Mai 1931. Sonderdruck aus Zentralblatt für Psychotherapie und ihre Grenzgebiete, Band VI, Heft 1. Boards. Pp. 27. Leipzig: Verlag von S. Hirzel.

This is the text of an address given by Dr. Feigenbaum before the German Medical Society of New York in honor of Freud's seventy-fifth birthday. The first part summarizes in condensed form the scientific principles on which psychoanalytic therapy is based. This serves as a necessary introduction for the real theme of the address—the value of an orientation in psychoanalytic principles on the part of the general practitioner and of physicians in other branches of medicine. This is illustrated by means of two cases, which are interestingly and briefly presented. One of these illustrates the futility and danger of a "rest cure" without understanding or even investigation of the patient's psychologic situation. This is contrasted with the prompt help that psychoanalysis was able to bring in a favorable case. The address concludes with a brief discussion of some of the limitations of the field in which psychoanalytic therapy is indicated.

A Guide for Developing Psychiatric Social Work in State Hospitals. By Hester B. Crutcher, Director of Social Work, Department of Mental Hygiene, State of New York. With a foreword by Frederick W. Parsons, M.D. Paper. Price, 50 cents. Pp. 57. Utica, New York: State Hospitals Press, 1933.

This monograph outlines the functions of psychiatric social workers in state hospitals. The qualifications, training and personality needed for this work are presented, and the importance of understanding the environment is stressed. Under the plan laid out, the social worker is an active agent in the actual treatment of patients and not, as is often the case, merely concerned with routine questions and answers. Enlightening and practical procedures are suggested in the later chapters. Several excellent outlines are presented for taking histories, preparole summaries, boarding home investigations, social analysis from the point of view of treatment, and monthly reports. It is wisely stressed that history forms must not be followed blindly, as informants will often bring up spontaneously much that would be missed by the routine question and answer method. The monograph does not so much give definite directions as to what should be done as suggest the lines that should be followed; it gives the psychiatrist an excellent idea of the services that can be rendered by social workers.

Abhandlungen aus dem Gesamtgebiete der Hygiene. Herausgegeben von Dr. R. Grassberger, o. ö. Professor der Hygiene, Leiter des Hygienischen Institutes der Universität in Wien. Heft 14: Das Verhalten von Blutkörperchen sowie von Mikroben in abgestuften Essigsäure-Vanadatgemischen; Eine biochemische Methode zum Studium der Artspezifität. Von Dr. H. M. Jettmar, Assistent am Hygienischen Institut der Universität in Wien. Paper. Pp. 121, with 19 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1934.

When serum is added to mixtures of various proportions of acetic acid and sodium vanadate, different forms of precipitation result. Herein lies the principle of Bendien's "lability reaction." Jettmar describes the effects on the blood corpuscles of various species by acetic acid and sodium vanadate mixtures; also the effects of such mixtures on micro-organisms in suspension. The results are of interest to students of chemicocolloid reactions in general.

Metabolic Diseases and Their Treatment. By Dr. Erich Grafe, Professor of Medicine and Director of the Clinic of Medicine and Neurology at the University of Würzburg, Germany. Translated by Margaret Galt Boise, under the supervision of Eugene F. Du Bois, M.D., Medical Director, Russell Sage Institute of Pathology, and Henry B. Richardson, M.D., Associate Professor of Medicine, Cornell University Medical College, New York. Cloth. Price, $6.50. Pp. 551, with 37 illustrations. Philadelphia: Lea & Febiger, 1933.

This volume, competently translated, has been revised and brought down to date since it appeared in German, about two years ago. Although it was primarily intended as a practical handbook for the physician and student, its chief interest for the American reader will probably depend on the mature, moderate and concise discussion of the experimental and theoretical considerations involved in the etiology and treatment of the metabolic diseases. The bibliography is rather extensive and is conveniently placed in footnote form on the pages where it is cited. Although German references predominate, the significant American literature is also represented. The subject matter is divided into five main parts: 1. General remarks concerning metabolism and nutrition (29 pages). 2. Nature and treatment of nutritional disorders (78 pages). 3. Metabolic diseases and their treatment (282 pages). This, the major section, is divided into three chapters, on obesity, habitual undernutrition (magersucht) and diabetes mellitus (202 pages). 4. Qualitative disturbances of protein metabolism and their treatment (77 pages); these include gout, alcaptonuria, cystinuria and aminuria. 5. Disturances of the water and mineral economy (36 pages). The author is conservative in his therapeutic advice. The book is well put together and is sufficiently well illustrated with tables and graphs. Photographs of a few patients have been reproduced.

Einführung in Geist und Studium der Medizin: Zwölf Vorlesungen. Von Dr. med. Georg B. Gruber, Professor der Pathologie an der Universität Göttingen. Boards. Price, 4.80 marks. Pp. 271, with one illustration. Leipzig: Georg Thieme, 1934.

This book on the spirit and study of medicine is intended for beginning medical students. Its aim is to give such students a bird's-eye view of the whole field of medicine and to emphasize the point of view that medicine is an "indivisible whole." It consists of twelve lectures, which trace the development of the fundamental medical sciences and the various medical specialties and point out their relationships to the study of medicine and to medical practice. The author devotes a good portion of each lecture to giving advice to the young medical student. In spite of the fact that these lectures serve as an interesting introduction to medical history, their general paternalistic tone, though perhaps necessary for the stimulation of beginning students, may be found amusing or irritating by more mature readers.

Safety in Physical Education in Secondary Schools. By Frank S. Lloyd, Associate Professor of Education, New York University. Publications of the National Bureau of Casualty and Surety Underwriters, Educational Series, Volume IX. Paper. Price, $1.25. Pp. 167. New York: National Bureau of Casualty and Surety Underwriters, 1933.

This is a careful statistical study of accidents in connection with physical education in secondary schools. As might be expected, football ranks high among causes of injury but, surprisingly enough, the gymnasium seems to be a more hazardous locality than the gridiron. Wrestling is high in injuries, while boxing is not. Among other very hazardous activities, in the order of importance, are touch football, heavy apparatus and football, while lacrosse, wrestling and tumbling are classified as highly hazardous. Ice hockey, archery, basketball, speed ball, field hockey and fencing are classed as hazardous, while pass ball, field and track, soccer, cross country and swimming are designated slightly hazardous. Minimum hazards are to be anticipated in handball, golf, indoor ball, dancing, boxing, volleyball, tennis and calisthenics, in the order named. The accident incidence per thousand participating individuals appears to bear no direct relation to days lost, although in general the very hazardous, highly hazardous, hazardous, mildly hazardous, and minimum hazard sports are grouped more or less alike, with respect both to accident incidence and to days lost. This is a publication which is indispensable to directors of physical education, coaches and athletic officials, not only for its statistical studies but also for its constructive recommendations. Those physicians who have to do with school work and athletic activities will also find it valuable.

Developing Attitudes in Children. Proceedings of the Mid-West Conference of the Chicago Association for Child Study and Parent Education, March, 1932. Cloth. Price, $1.50. Pp. 156, with illustrations. Chicago: University of Chicago Press, 1933.

This book contains three main papers and six round-table discussions concerning the development of various attitudes in children, such as ethical, vocational and religious. As is frequently the case when a number of addresses are collected, it is found that there is no coherence in the group. Often, oratory is more important than facts, as in this book. Here, too, occasional conclusions are presented, but facts that support them are not given. The book, in general, tends to indicate that children accept the attitude of their parents and teachers and accept the views of those on whom they are dependent. It should not require a book of this length to reach that conclusion.

Précis de microscopie: Technique, expérimentation, diagnostic. Par le Dr. M. Langeron, chief de laboratoire à la Faculté de médecine de Paris. Fifth edition. Cloth. Price, 100 francs. Pp. 1205, with 365 illustrations. Paris: Masson & Cie, 1934.

The present edition of this textbook on microscopic procedures is a worthy member of the medical series which the publishers have sponsored. It is completely rewritten and has many new chapters. The changes have been so numerous that it is almost a new book. Recent advances in the various types of microscopic illumination, micromanipulation and microchemistry are some of its features. The text is concise, and useless detail has been omitted. When supplementary information might be desirable, the author gives bibliographic references. The list, however, is not sufficiently inclusive for the amount of material covered. The organization of the book is excellent and is well adapted for the novice in the study of microscopy as well as for those desiring a reference work on microscopic procedures beyond the scope of the average textbook. There are three main sections. The first deals with the microscope and its accessories. This is a concise and comprehensive discussion and should satisfy the needs of most students of microscopy. The second section deals with general microscopic methods and the technic of the various ways of preparing material for microscopic study. There is an ample discussion of vital staining and cytologic technic, with due consideration of the current theories and the most recent procedures. The third section deals with special methods for the microscopic investigation of protozoa, metazoa and bacteria. The value of the book would have been decidedly enhanced by a more adequate illustration of the second and third sections. For the most part this is not a standardized book on laboratory procedures, as many of the methods are new and have not been thoroughly tried. The volume is, however, a definite contribution as a concise reference book or as a textbook for students of microscopy.

The Practice of Surgery. By Russell Howard, C.B.E., M.S., F.R.C.S., Surgeon, London Hospital, and Alan Perry, M.S., F.R.C.S., Surgeon, London Hospital. Fourth edition. Cloth. Price, $10. Pp. 1388, with 592 illustrations. Baltimore: William Wood & Company, 1933.

This textbook serves as a good outline of general surgery as planned for students. Many features are somewhat unusual, especially the emphasis placed on diagnosis and treatment. The organization is similar to that of most textbooks of similar character. The subject matter is gradually and continuously developed from the presentation of basic pathologic and immunologic principles. The authors are to be commended for their inclusive discussion of traumatic surgery.

Die Embolie. Von Dr. Sigurd Frey, Privatdozent für Chirurgie an der Universität Königsberg/Pr. Boards. Price, 12 marks. Pp. 178, with 52 illustrations. Leipzig: Georg Thieme, 1933.

This monograph, written by a surgeon, naturally treats the subject from a surgical point of view. Emboli located in organs where they may be treated surgically are fully discussed. Nonsurgical emboli, such as those in the kidney, brain, heart and spleen, are given scanty consideration. So also are the emboli due to bacteria, parasites, pigment, tumor cells or foreign bodies. The causes of thrombosis and the structure of thrombi are fully discussed, as are the clinical features and the results of thrombotic emboli on the lung, extremities and intestine. The surgical treatment of each of these accidents is set forth with clear description and suitable illustrations. The subject of air embolism is given forty-five pages. Fat embolism also is fully treated. There is an extensive bibliography filling about twenty-five pages; according to a rough estimate, more than 90 per cent of the references are to German literature and less than 10 per cent to the literature of the rest of the world.

Text-Book of Pathology. By Robert Muir, M.A., M.D., Sc.D., Professor of Pathology, University of Glasgow. Third edition. Cloth. Price, $10. Pp. 957, with 546 illustrations. Baltimore: William Wood & Company, 1933.

The first edition of this book appeared in 1924. The present edition includes recent advances and has many new illustrations as well as a new index. The book presents general pathology in chapters on disturbances of nutrition and circulation, on inflammation and on tumors. The rest of the book deals mainly with the special pathologic anatomy of the circulatory, respiratory, hematopoietic, alimentary, urinary, nervous, locomotive and reproductive systems. The last chapter is devoted to the endocrine glands. The skin, the eye and the ear are not considered. Within its field Muir's work may be regarded as a standard textbook, with special emphasis on the morphologic changes produced by disease.

The Pharmaceutical Pocket Book for Practitioners and Students. Published by the Pharmaceutical Society of Great Britain. Twelfth edition. Fabrikoid. Price, 5/6d. Pp. 344. London: Pharmaceutical Press, 1933.

This is published with the idea of epitomizing in convenient form the science and art of prescribing. It also contains for those who are not physicians a number of tables dealing with sources of drugs, directions for making a herbarium, and chapters on bacteriology and even on food and diet. As would be expected from this type of book, it is of service to those who are interested in drug therapy without being interested in the best interests of scientific medicine. For instance, a complex description is given for preparing an emulsion of petroleum. Pharmaceutically it is well worth reading, but medically it reflects prescribing of twenty-five years or more ago. The typographic setup of the book is excellent and could well be emulated by American authors of similar treatises.

A Reference Hand-Book of Gynecology for Nurses. By Catharine MacFarlane, M.D., F.A.C.S., Professor of Gynecology, Woman's Medical College of Pennsylvania. Sixth edition. Cloth. Price, $1.50. Pp. 175, with 79 illustrations. Philadelphia & London, W. B. Saunders Company, 1934.

This book has passed through six editions since its first appearance in 1908, when it was evolved from the author's lecture notes in gynecology. It has always maintained a high standard of accuracy and is marked for its brevity and illustrations. The trained nurse may by its use refresh her memory or revise her ideas concerning present-day practice and procedure with but small effort. The new material added to the present edition is well chosen and concisely stated. Only on minor points can one take issue with the author, such as concerning the site of fertilization of the ovum (p. 26) and the viability of the unfertilized ovum (p. 28). As a whole, the book can be highly recommended to the nurse, for whom it is intended and for whom it was prepared.

Die Spezifizität der serologischen Reaktionen. Von Dr. K. Landsteiner, the Rockefeller Institute for Medical Research, New York. Paper. Price, 8.80 marks. Pp. 123. Berlin: Julius Springer, 1933.

The purpose of this monograph is to summarize the results of the work of the author and his co-workers on antigens and to discuss serologic specificness and related questions. As would be expected from the leader in the chemical study of specificness, attention centers mainly on chemical work bearing on fundamental problems. The presentation follows essentially the development of this work. There is an introductory statement of the concept of specificness, which is followed by sections on the serologic specificness of proteins, on the specificness of cellular antigens, on the specificness of the antibodies, on serologic reactions with artificial antigenic complexes and simple chemical substances, and on chemical investigations of specific cell substances (carbohydrates, lipoids). The author is a master of clear, concise, correct statement. His method of reviewing published work is a model of exactness and concrete precision. Not a word is wasted. Landsteiner's monograph is a classic contribution. It should be translated into English.

Medicolegal

Medical Practice Acts: Internal Curative Medicine: Use by Osteopath Unlawful.—The defendant, a licensed osteopath, treated a patient for hemorrhoids by the interstitial infiltration method, using a solution of 95 per cent Wesson oil with 5 per cent phenol. The state of Iowa, contending that this constituted the practice of medicine, sought to enjoin him. The trial court denied the injunction and the state appealed to the Supreme Court of Iowa.

A license to practice osteopathy or osteopathy and surgery, said the Supreme Court, does not authorize the holder to prescribe or give internal curative medicine. If the defendant prescribed or gave internal curative medicines, the injunction prayed for by the state should have been granted. The defendant, while admitting that phenol is a common drug, insisted that it was not a curative medicine. Several osteopathic witnesses testified that phenol is not a curative medicine and that, as the defendant had administered it, he had not administered an internal medicine. But, said the Supreme Court, the statements of these osteopathic witnesses were evidently influenced by the theory of osteopathy, which does not believe in curing patients by the use of curative medicines. Moreover, the opinion of the witnesses with respect to curative medicines is ordinarily of lesser value than the opinion of a nonsectarian practitioner. Four nonsectarian physicians testified that phenol is an internal curative medicine and that the use of it by the defendant was the administering of medicine internally. As a matter of fact, continued the court, the defendant's own testimony shows that he used phenol internally. It is true that he did not administer it through the patient's mouth, but in modern practice internal curative medicine is frequently administered, not through the mouth, but into another part of the body by the use of the hypodermic needle or by some other process. According to the defendant's own testimony, he administered the phenol internally to set up counterirritation in the system near the hemorrhoid which he was treating. In other words, he desired the counterirritant in the treatment, in addition to the ordinary manipulations of an osteopath. As thus administered, the phenol was an internal curative medicine. As was said in *State* v. *Stoddard* (Iowa), 245 N. W. 273:

> Internal curative medicine . . . is some substance or preparation administered internally for the cure, removal, or healing of some disease or condition demanding medical treatment.

Clearly, then, said the Supreme Court, by thus administering the phenol, the defendant gave internal curative medicine to his patient. He departed from the boundaries of osteopathy into the field of the practice of medicine and under no circumstances does his license to practice osteopathy entitle him so to do. In so practicing he violated the medical practice act and hence may be restrained by permanent injunction.

For the reasons stated above, the Supreme Court ordered that an injunction be issued, enjoining the defendant from practicing medicine.—*State* v. *McPheeters (Iowa), 249 N. W. 349.*

Malpractice: Fragments of Turbinate Bone Lost in Respiratory Tract.—On March 29, 1930, the defendant performed a turbinectomy on the plaintiff. She, in this action against the defendant, claimed that two pieces of turbinate bone were negligently permitted by the defendant to fall down her throat and lodge in her bronchial tubes or lungs. As a result of this negligence, it was contended, she became severely ill and developed acute tuberculosis. The jury returned a verdict for the plaintiff and the defendant appealed to the Supreme Court of South Dakota.

The situation in this instance, said the Supreme Court, is similar to cases in which surgeons leave instruments, sponges and other foreign articles inside a patient. The physician's negligence in performing the operation was submitted to the jury under appropriate instructions, and the acts of the physician in severing the turbinates, the caution and care he used in performing his work, and the care and skill he used to prevent the turbinates from falling into the patient's throat and ultimately being inhaled into her lungs were all questions for the jury. The doctrine of nonliability because of error of judgment, continued the court, is not applicable here, for the reason that the defendant made no attempt in his defense to bring himself within that rule. He stood squarely on the contention that no turbinate bones were lost and that no such bones ever reached the plaintiff's lungs. He simply contended that nothing happened. Had he contended that he exercised his best judgment and gave careful attention to what he was doing, then it would be conceded that he would not have been liable for a mere error of judgment. The defendant complained that the trial court did not instruct the jury that the negligence in the case, if any, would have to be established through the testimony of experts. We do not consider, said the Supreme Court, that in this case such an instruction was warranted. Both experts and nonexperts testified in the case and the jury had the right to take into consideration all of this evidence and all of the facts and circumstances, and was not limited to the naked evidence of experts. If the testimony of the defendant to the effect that he removed the pieces of turbinate bone and examined them was reasonable and worthy of belief, why, questioned the court, did he push a probe through the nasal cavity and why did he tell the plaintiff that the bone must have gone down? Why did he make several x-ray and fluoroscopic examinations? The defendant's testimony, said the court, is inconsistent with what he did at the time of performing the operation and also with his subsequent acts. There is a sharp conflict in the testimony as to whether or not the fragments entered the plaintiff's lungs. The question was submitted under appropriate instructions to the jury. They saw fit to believe the plaintiff and her witnesses, and, concluded the court, we feel that there is substantial and credible evidence to sustain the verdict of the jury. The judgment of the trial court was therefore affirmed.—*Bennett* v. *Murdy (S. D.), 249 N. W. 805.*

Medical Practice Acts: Roentgen Treatment as Practice of Medicine.—The plaintiff sued Dr. Frederick E. Diemer and Dr. Frank E. Butler, as co-partners, for a scar allegedly the result of the defendants' negligence in treating by roentgen rays a tuberculous gland on the plaintiff's neck. Dr. Diemer was not served with a copy of the summons and complaint and did not appear in the case. Evidence was adduced at the trial to show that the firm of Diemer and Butler was a corporation, organized under the laws of Oregon, to carry on the theory and practice of "Roentgenology, Radiation, Therapy. . . ." Furthermore, it was shown that Dr. Butler was an officer of Diemer and Butler, Inc., but that he had practically nothing to do with the treatment of the plaintiff and did not administer any of the treatments, which were administered by a technician. The liability of Dr. Butler was apparently predicated on the contention that as a partner he was liable for the plaintiff's injuries, even though he did not personally treat her. The trial court directed a verdict for Dr. Butler, holding (1) that the plaintiff had erred in bringing the suit against him as a co-partner of the firm and (2) that there was no evidence that the scar on the plaintiff's neck was due to negligent treatment.

In her appeal to the Supreme Court of Oregon, the plaintiff contended that physicians could not legally incorporate to practice medicine and that therefore the trial court erred in holding that Diemer and Butler constituted a corporation. The use of the x-ray machine or electrotherapy does not necessarily constitute the practice of medicine in Oregon, said the Supreme Court. Section 68-2118, Oregon Code, 1930, provides that the provisions of the medical practice act "shall not be construed to affect or prevent the following: . . . (15) the practice of physiotherapy, electrotherapy or hydrotherapy carried on, by or under the direction of duly licensed practitioners of medicine and surgery. . . ." Under this provision, continued the Supreme Court, it is lawful for persons to incorporate to carry on the business of using the x-ray or electrotherapy. While operating the x-ray machine, the corporation was employed in operating a mechanical device which may be operated, said the court, by any one without a license from the

state, provided it is under proper supervision. The Supreme Court concurred in the finding of the trial court that Diemer and Butler constituted a corporation and that there was no evidence that the two physicians held themselves out as partners in the practice of medicine.

There was no evidence, continued the court, to show that the scar on the plaintiff's neck was the result of negligent treatment. The evidence showed that the breaking down of the tuberculous glands would itself cause a scar, regardless of the x-ray treatments. Whether the breaking down resulted from the administration of the x-ray treatment or whether it came from the disease itself was left wholly to speculation and conjecture. Where the testimony shows plainly that there are two or more causes, for only one of which a defendant is liable, and the matter is left to mere speculation and guess, the case should not be submitted to the jury. The manipulators of x-ray machines, in the use thereof, are to be measured by the standard of care, skill and diligence that would be exercised by a physician and surgeon of ordinary care, skill and diligence under the same circumstances and conditions, regardless of locality. Nevertheless it is necessary for the plaintiff to prove that the negligent use of the x-ray machine was the proximate cause of the injury of which the plaintiff complained. This was not done in the present case. The judgment of the trial court was affirmed.—*Doumitt v. Diemer (Ore.), 23 P. (2d) 918.*

Optometry Practice Acts: Right of Board Member to Prefer Charges and to Sit in Revocation Proceedings.—After notice and hearing, the New Jersey board of optometrists revoked Gross's license to practice optometry. He brought certiorari to the supreme court of New Jersey, questioning the legality of the revocation. The secretary of the board, he contended, was disqualified from sitting in the proceedings, since he had preferred the charge on which the proceedings were based. The supreme court of New Jersey, however, did not agree with Gross's contention. The secretary of the board, said the supreme court, had no personal interest in this matter. Section 11 of the optometry practice act (Comp. St. Supp. Sec. 127—99) expressly provides that charges may be preferred against a licensed optometrist to revoke his license by any person or corporation, or the board may on its own motion direct its secretary to prefer the charges. The secretary brought the complaint as a result of a conference with the members of the board and on behalf of the board. Moreover, the complaint was based on a matter of public record, Gross's conviction of a crime, as expressly contemplated in the act. The act, concluded the court, does not intimate that when the secretary prefers charges he should not hear them; in fact, a certificate can be revoked only by unanimous vote of the board sustaining the charges. The order of the board revoking Gross's license was accordingly affirmed.—*Gross v. New Jersey State Board of Optometrists (N. J.), 167 A. 25.*

Medical Practice Acts: Other Violations as Evidence.—When a defendant, said the court of appeals of Georgia, division 1, is charged with practicing medicine without a license, evidence tending to show that about the time charged in the indictment he treated persons other than the one named in the indictment is admissible. In such a prosecution it is proper for the trial court to admit in evidence an indictment, returned some four years previously, to which the defendant had pleaded guilty, charging him with practicing medicine without a license. —*Lyda v. State (Ga.), 169 S. E. 751.*

Malpractice: Physical Examination of Plaintiff—Right of Defendant Physician to Demand.—The general rule in Texas, said the court of civil appeals of that state, is that a person suing for damages for personal injury cannot be compelled to submit to a physical examination by physicians of either the defendant's or the court's selection. But when such a person voluntarily exhibits the injured part of his body to a jury during the trial of his case, he thereby waives the inherent inviolability of his person and his immunity from examination by experts. In such a case, speaking generally, the defendant may properly demand that the plaintiff submit to reasonable examination by reputable physicians of the defendant's selection, and the trial court's refusal of the defendant's motion therefor constitutes error. But such error does not necessarily require reversal. It is only when the error has apparently or probably resulted in injury to the defendant that the judgment should be reversed.—*Kenney v. LaGrone (Texas), 62 S. W. (2d) 600.*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Birmingham, April 17-19. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association for the Study of Neoplastic Diseases, Baltimore, March 29-31. Dr. E. R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D. C., Secretary.

American Association of Anatomists, Philadelphia, March 29-31. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Toronto, Canada, March 29-30. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American College of Physicians, Chicago, April 16-20. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.

American Gastro-Enterological Association, Atlantic City, April 30-May 1. Dr. Russell S. Boles, The Rittenhouse Plaza, Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Charleston, S. C., April 3-5. Dr. Robert L. Loughran, Bridgewater, Conn., Secretary.

American Otological Society, Atlantic City, April 6-7. Dr. Thomas J. Harris, 104 East 40th Street, New York, Secretary.

American Physiological Society, New York, March 28-31. Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn., Secretary.

American Society for Clinical Investigation, Atlantic City, April 30. Dr. H. L. Blumgart, 330 Brookline Avenue, Boston, Secretary.

American Society for Experimental Pathology, New York, March 28-31. Dr. C. Phillip Miller, Jr., 950 East 59th Street, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, New York, March 27-31. Dr. V. E. Henderson, Medical Building, University of Toronto, Toronto, Canada, Secretary.

American Society of Biological Chemistry, New York, March 28-31. Dr. H. A. Mattill, Chemistry Building, State University of Iowa, Iowa City, Secretary.

Arkansas Medical Society, Little Rock, April 16-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.

Association of American Physicians, Atlantic City, May 1-2. Dr. James H. Means, Massachusetts General Hospital, Boston, Secretary.

California Medical Association, Riverside, April 30-May 3. Dr. Emma W. Pope, 450 Sutter Street, San Francisco, Secretary.

District of Columbia, Medical Society of the, Washington, May 2. Dr. C. B. Conklin, 1718 M Street, N.W., Washington, Secretary.

Federation of American Societies for Experimental Biology, New York, March 28-31. Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn., Secretary.

Florida Medical Association, Jacksonville, April 30-May 2. Dr. Shaler Richardson, 111 Ward-Adams Street, Jacksonville, Secretary.

Georgia, Medical Association of, Augusta, May 8-11. Dr. Allen H. Bunce, 139 Forrest Avenue, N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 15-17. Dr. Harold M. Camp, Lahl Building, Monmouth, Secretary.

Iowa State Medical Society, Des Moines, May 9-11. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.

Kansas Medical Society, Wichita, May 9-11. Dr. J. F. Hassig, 804 Huron Building, Kansas City, Secretary.

Louisiana State Medical Society, Shreveport, April 9-12. Dr. P. T. Talbot, 1430 Tulane Avenue, New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 24-26. Dr. Walter Dent Wise, 1211 Cathedral Street, Baltimore, Secretary.

Mississippi State Medical Association, Natchez, May 8-10. Dr. T. M. Dye, McWilliams Building, Clarksdale, Secretary.

Missouri State Medical Association, St. Joseph, May 7-10. Dr. E. J. Goodwin, 634 North Grand Boulevard, St. Louis, Secretary.

National Tuberculosis Association, Cincinnati, May 14-17. Dr. Charles J. Hatfield, Henry Phipps Institute, Philadelphia, Secretary.

New Hampshire Medical Society, Manchester, May 15-16. Dr. C. R. Metcalf, 5 South State Street, Concord, Secretary.

New York, Medical Society of the State of, Utica, May 14-16. Dr. D. S. Dougherty, 2 East 103d Street, New York, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, April 30-May 2. Dr. L. B. McBrayer, Southern Pines, Secretary.

Northern Tri-State Medical Association, Flint, Mich., April 10. Dr. Herbert E. Randall, 503 South Saginaw Street, Flint, Mich., Secretary.

South Carolina Medical Association, Charleston, May 1-3. Dr. E. A. Hines, Seneca, Secretary.

South Dakota State Medical Association, Mitchell, May 14-16. Dr. John F. D. Cook, Langford, Secretary.

Tennessee State Medical Association, Chattanooga, April 10-12. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.

Texas, State Medical Association of, San Antonio, May 7-10. Dr. Holman Taylor, Medical Arts Building, Fort Worth, Secretary.

Western Branch Society American Urological Association, Los Angeles, April 27-29. Dr. George W. Hartman, 999 Sutter Street, San Francisco, Secretary.

West Virginia State Medical Association, Huntington, May 14-16. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

3: 193-224 (Dec.) 1933

Epigastric Hernia. L. L. Hill, Jr., Montgomery.—p. 193.
Gonorrhea in the Female Child: Report of Eighteen Cases. J. P. Robertson, Birmingham.—p. 196.
Hormone Test for Pregnancy. J. O. Morgan, Gadsden.—p. 202.
Ununited Fracture of the Neck of the Femur. J. D. Sherrill, Birmingham.—p. 204.
The Changing Order. C. C. Fargason, Dadeville.—p. 206.

American Heart Journal, St. Louis

9: 143-282 (Dec.) 1933

Nature of Vascular Communications Between Coronary Arteries and Chambers of the Heart. J. T. Wearn, S. R. Mettier, T. G. Klumpp and Louise J. Zschiesche, Cleveland.—p. 143.
Arterial Blood Vascular Distribution to Left and Right Ventricles of the Human Heart. L. Gross and M. A. Kugel, New York.—p. 165.
*Cardiac Hypertrophy of Unknown Etiology in Young Adults: Clinical and Pathologic Study of Three Cases. R. L. Levy and L. M. Rousselot, New York.—p. 178.
Heart in Myxedema: Report of Two Cases. P. Hallock, Minneapolis.—p. 196.
Studies in Oscillometry. A. Friedlander, Cincinnati.—p. 212.
*Use of Quinidine in Ambulatory Patients for the Prevention of Paroxysms of Auricular Flutter and Fibrillation, with Especial Reference to Dosage and Effects on Intraventricular Conduction. H. Gold, H. L. Otto and H. Satchwell, New York.—p. 219.
Identification of Separate Components of the QRS Complex, with Especial Reference to the So-Called Prominent Q Wave in Lead III. L. M. Hurxthal, Boston.—p. 238.
Clinical Dose and Effects of Digitalis Assayed by the Pigeon Method. A. B. Stockton, San Francisco.—p. 248.
*Effect of Adenosine on Cardiac Irregularities in Man. A. Jezer, B. S. Oppenheimer and S. P. Schwartz, New York.—p. 252.
Electrocardiographic Study During a Paroxysm of Angina Pectoris. G. R. Brow and D. V. Holman, Montreal.—p. 259.
Coronary Occlusion Due to Metastases from Carcinoma of the Breast: Report of Case Coming to Necropsy Five Years After Radical Mastectomy. T. A. Pejgard and L. M. Larson, Minneapolis.—p. 265.
Paroxysmal Complete Auriculoventricular Heart Block: Case Report. A. Sachs and R. L. Traynor, Omaha.—p. 267.

Cardiac Hypertrophy in Young Adults.—Levy and Rousselot describe three cases presenting an unfamiliar picture. The main features were great cardiac enlargement, intraventricular thrombosis with embolisms to the viscera and death within a year after the symptoms were well established. There were no signs of valvular disease or arteriosclerosis, and the blood pressure was at the normal level or slightly below it. Microscopic examination of the myocardium showed hypertrophy of muscle fibers in all, infarcts in varying stages of degeneration and repair in two, and in one of these a curious hydropic degeneration of the cells of the cardiac muscle with vacuolization of the sarcoplasm. The third case showed only a few hemorrhages between the muscle bundles. No inflammatory changes or signs of arteriolar disease were observed. Though clinically the patients presented many essential features in common, the lesions at necropsy were not identical. It was not possible to state whether these cases represented a single condition at different phases of its development or were entirely unrelated in their pathogenesis. The etiology remained obscure.

Quinidine for Prevention of Auricular Fibrillation.—During the past two years Gold and his associates have followed the clinical course in twenty-one patients having paroxysmal auricular fibrillation or flutter. In several of those who received quinidine in varying doses—in some up to 50 grains (3.25 Gm.) daily—the attacks remained uninfluenced, while, in a few in whom the attacks appeared to have been diminished in frequency or abolished at one time or another, the influence of the drug could only occasionally be definitely established. Most of these patients were ambulatory. Depression of auriculoventricular conduction by quinidine usually does not play an important part in the therapeutic effects of the drug in auricular flutter and fibrillation. However, in one case that the authors report, depression of auriculoventricular conduction by large doses of quinidine was solely responsible for the almost complete symptomatic relief during a period of more than a year. Another unusual aspect of the action of quinidine in this patient was the fact that the frequency of the paroxysms of fibrillation or flutter were not diminished but were nearly doubled during this period. The probable mechanism of this unusual reaction to quinidine is discussed. A fixed daily dose of quinidine produces its full effects very early, so that, if it has not produced toxic effects in the first few days, it is unlikely that toxic effects from the direct action of the drug will result from its continued administration for long periods of time. Thus in one of their patients a daily dose of 60 grains (4 Gm.) of quinidine sulphate prolonged the auriculoventricular conduction time by 20 per cent and the intraventricular conduction time by 30 per cent after the first few days, but the continued use of this dose for 364 days did not increase these effects further. Since quinidine is rapidly excreted and shows slight "cumulation," the matter of importance in dosage is the size of the daily dose rather than the total quantity given over a period of time. The authors present evidence in support of the view that the use of a small "maintenance dose" of quinidine to maintain the normal rhythm established with larger doses exerts no appreciable influence on the persistence of the normal rhythm in the ambulatory patient, and that in general more intense quinidine effects are necessary to overcome the influences that precipitate an attack of flutter or fibrillation in the ambulatory patient than to abolish an attack while the patient is at rest.

Yeast Nucleic Acid and Cardiac Irregularities.—Jezer and his associates administered a yeast nucleic acid derivative (adenosin) intravenously in doses varying from 25 to 45 mg. in eight patients who developed paroxysmal tachycardia while under observation at the hospital. In paroxysmal auricular flutter and in paroxysmal auricular fibrillation the drug increased the grade of auriculoventricular block for from forty to sixty seconds. The abnormal rhythm was not abolished. In paroxysmal tachycardia of auricular origin the drug temporarily abolished the ectopic rhythm in one case and was ineffective in restoring sinus rhythm in a second case. In paroxysmal tachycardia of supraventricular origin there was no effect on the rate or rhythm of the heart. Ventricular standstill for periods of from 1 to 9.2 seconds followed the administration of the drug in the patients having an abnormal rhythm of auricular origin. During these periods the patients experienced giddiness, faintness and precordial pain. The symptoms disappeared with the return of ventricular contractions. In man, the yeast nucleic acid derivative is of doubtful therapeutic value in paroxysmal tachycardia of auricular origin and of no therapeutic value in the other ectopic rhythms that were studied by the authors.

American Journal of Cancer, New York

19: 789-1080 (Dec.) 1933

Effect of Iodine Vapor on Growth of Fibroblasts of Embryonic Chick Heart and Malignant Tumor Cells in Vitro. A. Strickler and Ona M. Fowler, Philadelphia.—p. 789.
Disturbance of Thyroid Mechanism and Its Effects on Tumor Growth in Mice. M. Levine and V. H. Kugel, New York.—p. 817.
Squamous Cell Carcinoma of the Skin. B. F. Schreiner, New York.—p. 829.
*Multiple Myeloma Complicated by Intestinal Obstruction Due to Amyloid Infiltration of Small Intestine. O. S. Randall, Minneapolis.—p. 838.
Failure of Ethyl Alcohol in Therapy of Spontaneous Mouse Cancer. M. C. Marsh, Buffalo.—p. 847.

Multiple Myeloma Complicated by Intestinal Obstruction Due to Amyloid Infiltration.—Randall presents a case of multiple myeloma in which the intestinal symptoms associated with increasing distention and audible and visible peristalsis and the marked presence of gas in the small intestine were characteristic of mechanical obstruction. He states that it was difficult to say what the etiologic factors were clinically, and even at operation diffuse metastasis to the small intestine was considered. From the postmortem observation it was evident that little functional activity could have taken

place. The walls of the intestine were rigid and anemic and intestinal contractions were consequently rendered ineffectual. The author believes that the explanation given by Lubarsch and Borchardt is applicable to his case. They believe that the infiltration of the musculature of the intestine with amyloid causes a paralysis of peristalsis to a large extent and acts as a mechanical obstruction. This is certainly a type of case that no known therapy, operative or otherwise, could benefit. In the author's case the amyloid was confined particularly to the circular muscle of the small intestine and none was found in the colon. In contrast to Hueter's case, there were no ulcerations in the mucosa and no amyloid in the villi or submucosa. There were large albuminous casts in the tubules of the kidneys, practically obstructing their lumens and in turn causing the epithelial cells to become swollen. Microscopic observations accounted for the clinical evidence of kidney damage. Furthermore, this picture may account for interpretation of the changes of the kidney in myeloma as a nephrosis, though in this case the condition appeared to be essentially an obstructive process. There was no amyloid found in the kidney nor was there any glomerular damage.

American J. Obstetrics and Gynecology, St. Louis

26: 789-936 (Dec.) 1933

Evaluation of Radiation Therapy in Malignant Disease of the Female Generative Tract. W. P. Healy, New York.—p. 789.
Clinical and Experimental Study of Endometriosis. E. Allen, Chicago.—p. 803.
The Calcium Problem in Pregnancy. C. B. Reed, Chicago.—p. 814.
Five Hundred Women with Serious Heart Diseases Followed Through Pregnancy and Delivery. F. B. Carr, Worcester, Mass., and B. E. Hamilton, Boston.—p. 824.
Trauma and Compensation in Gynecology and Obstetrics. J. R. Miller, Hartford, Conn.—p. 839.
Congenital Aspiration Pneumonia in Stillborn and New-Born Infants: Analysis of One Hundred and Fifty-Nine Necropsy Examinations. F. C. Helwig, Kansas City, Mo.—p. 849.
Changes in Urinary Tract During Pregnancy. I. J. Strumpf, New York.—p. 857.
Fertility in the Male: I. Technic Problems in Establishing Standards of Fertility. D. L. Belding, Boston.—p. 868.
Treatment of Postpartum Retrodisplacement of the Uterus. W. M. Findley, New York.—p. 874.
*Amniography with Skiodan Injections: Preliminary Report. F. L. Adair and M. E. Davis, Chicago.—p. 881.
*Chlorothymol as an Antiseptic in Obstetrics: Preliminary Report. A. C. Beck, Brooklyn.—p. 885.
Spontaneous Rupture of Uterus After Myomectomy. R. A. Hurd, New York.—p. 889.
Early Detection of Chorionepithelioma by Means of Anterior Pituitary Hormone Tests: Report of Case. M. A. Castallo, Providence, R. I.—p. 893.
Calcification of Uterus Associated with Missed or Incomplete Abortion: Two Cases. F. R. Smith, New York.—p. 896.
Absence of Urethra Due to Obstetric Trauma. F. C. Helden, New York.—p. 899.
Birth of a Giant Fetus. J. E. Hobbs and W. Scrivner, St. Louis.—p. 902.
Spontaneous Rupture of Uterus with a Seven Months Pregnancy. A. A. Schenone, Brooklyn.—p. 904.
Carcinoma of Both Tubes, Both Ovaries and the Corpus of the Uterus. C. Culbertson, Chicago.—p. 906.
*Empirical Use of Blood Injections in the New-Born to Lessen Brain Hemorrhage. W. L. Carr, New York.—p. 906.
Tumor of Pelvis Resembling Embryonal Cell Carcinoma of the Ovary. M. T. Goldstine, Chicago.—p. 908.
Parasitic Dermoid of the Ovary with Spontaneous Amputation of the Tube. J. P. Greenhill, Chicago.—p. 909.
Postnatal Infection Due to Short-Chain Hemolytic Streptococci. L. E. Frankenthal, Jr., Chicago.—p. 910.

Amniography with Skiodan Injections.—Adair and Davis outline a method for amniography with skiodan in which the patient should be placed in the supine position. The bladder should be empty. The skin is sterilized at the site of the proposed puncture. Local infiltration anesthesia is used. The 40 per cent solution of skiodan should be warmed to body temperature and from 15 to 30 cc. injected through a needle into the amniotic cavity. A 3 inch flexible 19 gage needle is used. The site on the abdomen should be selected with reference to the fetal position, and the needle inserted where there is a maximum of amniotic fluid and a minimum of fetal parts. It should be inserted only far enough to secure amniotic fluid, which is drawn up into the syringe, mixed with the skiodan and reinjected. The patient should turn a few times after the needle is withdrawn to facilitate mixing the solution with the amniotic fluid. A good diffusion is obtained within an hour and a roentgenogram may be taken at the expiration of that time, or sooner if necessary. The roentgenograms have usually consisted of a lateral and an anteroposterior view. The chief things that can be visualized by the presence of this radiopaque material are (1) the amniotic cavity and usually that portion which lies over the placenta, (2) the fetal soft parts, including at times the fetal adnexa, such as the cord, and (3) an intensified shadow of the fetal skeleton.

Chlorothymol as an Antiseptic in Obstetrics.—Beck used a 1:500 and 1:1,000 solution of chlorothymol in 20 per cent alcohol and 10 per cent glycerin in the preparation of the vulva for delivery in 164 cases. The patients did not complain of irritation from its use. The tissues did not show any evidence of irritation. Laboratory experiments indicate that the commonly used antiseptics when diluted sufficiently to become nonirritating are much less efficacious than nonirritating solutions of chlorothymol in 20 per cent alcohol and 10 per cent glycerin. The clinical results in the 164 cases in which chlorothymol was used were better than those following the use of mercurochrome and iodine in a control series of 164 cases in spite of the fact that a larger number of the various factors which might cause morbidity were noted in the chlorothymol group.

Blood Injections to Lessen Brain Hemorrhage.—Carr states that the employment of blood and blood serum intramuscularly in babies born under abnormal conditions of labor is apparently beneficial. The immediate effect is to stimulate respiration, lessen venous congestion and establish, by lessening the pressure in the veins, a better balance in the systemic circulation. The babies in whom blood was injected show that this procedure is not injurious and may be used without injury. The author believes that injections of blood are indicated not only in cases of delay but also in babies with severe jaundice, such as icterus neonatorum gravis.

American Journal of Pathology, Boston

9: 827-990 (Nov.) 1933

Melanoma Studies: III. Theory of Pigmented Moles; Their Relation to Evolution of Hair Follicles. G. F. Laidlaw and Margaret R. Murray, New York.—p. 827.
*Cytology of Glioma Group, with Especial Reference to Inclusion of Cells Derived from Invaded Tissue. L. B. Cox, Melbourne, Australia.—p. 839.
Origin of One Type of Secondary Pneumonia. V. H. Moon, Philadelphia.—p. 899.
*Fibroma of the Breast. B. Halpert and D. L. Dial, New Haven, Conn.—p. 905.
Liposarcoma: Report of Case with Intracranial Metastases. F. A. Fender, Rochester, N. Y.—p. 909.
The Hydrogen Ion Concentration of Formalin: Factor in Fixation: Adjustment and Stabilization of Hydrogen Ion Concentration of Formalin Solutions. F. V. Burke, New York.—p. 915.

Cytology of Glioma Group.—From his study of 120 intracranial tumors, including seventy gliomas, Cox concludes that names with an embryogenic significance do not in all cases give the true values of the cells described. This in particular applies to the medulloblast and to certain of the spongioblasts and astroblasts. The neuroblast, a cell that is difficult to identify, may be confused with included nerve cells, cells of the astroblast type, and even with certain anaplastic, rapidly subdividing cells. The nature of a tumor will frequently be interpreted more correctly by the assumption of anaplastic changes overtaking a well differentiated tissue rather than ascribing it to differentiation of embryonic cells. The medulloblastoma of childhood possesses certain qualities that suggest the possibility of an embryonic origin. The ordinary gliomas appear to fall into certain categories: (1) tumors of adult tissue (astrocytoma and its modifications, ependymoma and its modifications, oligodendroglioma, pinealoma and adult ganglioneuroma), (2) highly anaplastic tumors that may occur independently or in association with any of the foregoing (glioblastoma multiforme), (3) transitional forms between the foregoing (astroblastoma, polar spongioblastoma), (4) medulloblastoma (possibly a true embryonic tumor) and (5) rare tumors of the type of medulloepithelioma and neuro-epithelioma, concerning which no opinion is expressed here. The mitotic figure content of such tumors offers the most accurate index of their activity, rather than deductions derived from their resemblance to embryonic cells. The difficulty in distinguishing between truly neoplastic cells

and those that are derived from the glial tissue is discussed in some detail. The great advantage of postmortem material as opposed to operative fragments is apparent.

Fibroma of the Breast.—Halpert and Dial report a case of fibroma of the breast in which the breast was the site of neoplastic growth on two previous occasions. The structure of the tumor removed at the first operation is not known. The growth removed at the second operation was a fibro-adenoma. The growth removed at the third operation was a pure fibroma in which the connective tissue closely resembled the connective tissue elements in the second growth. The question arises whether there is any causal relation between these growths or whether they are independent tumors arising at different times in the same breast. The latter seems to be the more plausible explanation, since there is no morphologic evidence that any of these growths were malignant. The tumor presented a sharply demarcated, oval, firm, elastic, lobulated mass measuring 4 by 5 by 6 cm. It cut with increased resistance and a gritty sensation, disclosing smooth, glistening, pearly white surfaces with a pattern of interlacing strands and whorls. It contained no glandular or adipose tissue. The breast tissue proper measured 6 by 8 by 10 cm. The nipple and areola appeared intact. Microscopic preparations showed the tumor to be composed of a fairly vascular, rather loose fibrous connective tissue containing no epithelial elements. It was surrounded by a thin but definite connective tissue capsule which separated the tumor from the surrounding normal tissue of the breast. The cell nuclei and the fibrils ran in interlacing streams and whorls. In some areas the connective tissue was as loose as embryonic tissue, in others it was fairly dense. The cell nuclei were spindle shaped and not hyperchromatic. Mitotic figures were scarce. No areas of necrosis were noted elsewhere in the preparations. When the patient was seen last, eight months following operation, there was no evidence of recurrence.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

30: 711-846 (Dec.) 1933

The Future of Radiology as a Medical Specialty. H. K. Pancoast, Philadelphia.—p. 711.
Influences Affecting the Future of Roentgenology. J. T. Murphy, Toledo, Ohio.—p. 718.
The Relation of the American Society for the Control of Cancer to Radiologists. C. C. Little, Bar Harbor, Maine.—p. 723.
*Lipiodol in Bronchography: Its Disadvantages, Dangers and Uses. J. B. Amberson, Jr., and H. M. Riggins, New York.—p. 727.
Tuberculosis of the Knee Joint: Comparison of Its Morbid Anatomy with Its Roentgenologic Manifestations. R. K. Ghormley, B. R. Kirklin and E. A. Bray, Rochester, Minn.—p. 747.
*Congenital Absence of Superior Orbital Wall Associated with Pulsating Exophthalmos: Report of Four Cases. L. T. LeWald, New York.—p. 756.
Pituitary Adenomas. R. C. Moehlig, Detroit.—p. 765.
"Miliary" Pulmonary Hemorrhages on Necropsy Roentgenograms of Children. W. E. Anspach, Chicago.—p. 768.
Further Cholecystographic Studies in the Late Months of Pregnancy. L. Levyn, E. C. Beck and A. H. Aaron, Buffalo.—p. 774.
Ileocecal Tuberculosis and the Double Contrast Enema Examination. J. Gershon-Cohen, Philadelphia.—p. 779.
The Appendix, Morphologically Considered. R. A. Rendich and B. Ehrenpreis, New York.—p. 791.
Separation of the Symphysis Pubis: Report of Five Cases. E. J. Bertin, Philadelphia.—p. 797.
Gastrohepatic Fistula: Case Report. C. G. Lyons, Hines, Ill.—p. 804.
Late Results from Combined Electrocoagulation and Irradiation of Superficial Cancers. H. H. Hazen, Washington, D. C.—p. 806.
Epiphyseal Chart. P. C. Hodges, Chicago.—p. 809.

Iodized Poppy-Seed Oil in Bronchography.—Amberson and Riggins state that in most cases retained iodized poppy-seed oil is gradually discharged through the bronchi. Direct absorption through the lung occurs to only a slight degree, if at all. A slight exudative reaction usually occurs about deposits of the iodized oil in the healthy lung, but this seems not to be harmful in the clinical sense. The transudation of edematous fluid may be considerable and this may account for the rapidly developing roentgenographic lobar opacity reported by some authors.* The oil may be retained for days, months or years in the pulmonary alveoli. From the roentgenologic point of view, this "contrast medium infiltrate" is a diagnostic disadvantage. The persisting densities may impair the value of serial roentgenograms as guides for treatment. Disadvantages and dangers peculiar to the cricothyroid or transtracheal method of injection include the escape of oil into and indefinite retention in the cervical and mediastinal tissues; the more or less serious infection of these tissues by escaping bronchial discharges, and, less often, pain, dysphonia, edema of the glottis, dysphagia, subcutaneous emphysema and air embolism. Iodism is due mostly to the swallowing of the oil and absorption of iodine through the intestine. Usually it can be avoided by carefully injecting the oil in small amounts, adopting measures to prevent retention in the lungs, postural drainage of the bronchi after bronchography and, finally, the administration of a brisk saline purge. In cases of infectious pulmonary disease, mainly tuberculosis and acute or chronic suppurative conditions, dissemination or aggravation can be caused by the injection. The reasons for this are given. Serious results and several fatalities are placed on record. Cases are also cited to prove the potential—even fatal—risk of intratracheal injection of iodized oil in cases in which there is impaired cardiac or respiratory function from different causes. Rational and effective ways to avoid the disadvantages and hazards are described. By the adoption of these measures the many advantages of iodized poppy-seed oil bronchography can be achieved usually without harm to the patient.

Absence of Superior Orbital Wall Associated with Pulsating Exophthalmos.—LeWald believes that congenital absence of the superior orbital wall causes pulsating exophthalmos. The condition is easily distinguished roentgenologically from sarcoma of the orbit, especially in view of the fact that there is usually deformity of the floor of the orbit in addition to the other bony changes. The inferior margin of the orbit may be lower than the corresponding region on the normal side. He reports four cases of congenital absence of the superior orbital wall, in one of which the diagnosis has been confirmed and a new orbital wall constructed by a bone transplant from the skull (Dandy). Two of the cases presented associated lesions due to the presence of diffuse neurofibromatosis (Recklinghausen's disease) and the other case, in addition to the associated Recklinghausen's disease, a congenital arteriovenous fistula of the right leg, causing localized gigantism, and a congenital deformity of the cervical spine. In the routine examination of roentgenograms of the head it is advisable for the roentgenologist to study carefully the bony outline of the orbits, in addition to a study of the nasal accessory sinuses. Enucleation of the eye, or ligation of the carotid artery, should never be performed in a case of pulsating exophthalmos, unless a roentgen examination has been made and shows no evidence of congenital absence of the superior orbital wall.

Annals of Otol., Rhinol. and Laryngology, St. Louis

42: 961-1272 (Dec.) 1933

*Venous Circulation of Petrous Bone and Its Clinical Significance. S. L. Ruskin, New York.—p. 961.
Discussion of Cardiac Pulmonary and Other General Conditions Secondary to Chronic Nasal Sinus Infection. J. B. Potts, Omaha.—p. 1002.
Fulminating Laryngotracheobronchitis. L. Richards, Boston.—p. 1014.
Study of Hydrogen Ion Concentration, Nitrogen Content and Viscosity of Nasal Secretions. Catherine C. Buhrmester, St. Louis.—p. 1041.
Congenital Anomalies of Esophagus, with Especial Reference to Congenitally Short Esophagus with a Portion of Stomach Above the Diaphragm. L. H. Clerf and W. P. Manges, Philadelphia.—p. 1058.
Phylogenic Development of the Cochlea. M. H. Lurie, Boston.—p. 1069.
Fibro-Epithelial Tumors of Nose (Papillomas) and Their Relationship to Carcinoma. E. M. Seydell, Wichita, Kan.—p. 1081.
Primary Carcinoma of the Lung: Bronchoscopic Observations. E. A. Looper, Baltimore.—p. 1104.
*Otolaryngologic Conditions Wrongly Attributed to an Enlarged Thymus. H. M. Janse, Houston, Texas.—p. 1110.
Some Clinical Observations on Nasal Hemorrhage. D. Roy, Atlanta, Ga.—p. 1117.
Study of Chronic Unexplained Cough with Aid of the Bronchoscope. L. E. Wolfson and L. A. Golden, Boston.—p. 1122.
Nonopaque Foreign Bodies in the Food and Air Passages. C. P. Schenck, Fort Worth, Texas.—p. 1128.
Significant Anatomic Features of the Auditory Mechanism, with Especial Reference to the Late Fetus. Dorothy Wolff, St. Louis.—p. 1136.
The Cause of Otosclerosis: Ontogenesis of the Aural Capsule. L. K. Guggenheim, St. Louis.—p. 1171.
*Suggested Modifications of the Laryngofissure Operation. J. M. Loré, New York.—p. 1205.

Venous Circulation of Petrous Bone.—Ruskin points out (1) that the venous pathways of the temporal bone play a leading part in the dissemination of infection from the tympanic cavity and the causation of intracranial complications, (2) that early extension of involvement of the venous system can be

recognized clinically and should serve as a guide for early accurate intervention, (3) that the Gradenigo syndrome should be considered a symptom of venous engorgement of the group of tympanic veins emptying into the inferior petrosal sinus, and (4) that the syndrome of temporomaxillary orbital pain, trismus and edema of the lower lid, which he describes, is of similar significance with the Gradenigo syndrome but represents venous engorgement of the veins of the tympanic cavity draining anteriorly into the pterygoid plexus and middle meningeal vein. Clinically, he has shown that the early incision of the drum membrane and the induction of free bleeding from the middle ear afford relief from the symptoms and may obviate suppuration of the petrous pyramid. It must not be construed that paracentesis and free bleeding from the middle ear will relieve advanced involvement of the petrosa with suppuration and bone coalescence. One must bear in mind that the orbital and trigeminal symptoms may be induced by mechanisms affecting the pterygoid and middle meningeal venous systems other than of petrosal origin and must be carefully differentiated to avoid unwarranted surgical invasion of the petrous bone.

Otolaryngologic Conditions Wrongly Attributed to Enlarged Thymus.—Janse reports six cases that could be and several that had been diagnosed as due to an enlarged thymus, whereas the lesion was entirely confined to the larynx and pharynx. In every infant with laryngeal symptoms a direct laryngoscopic examination should be made. In the majority of these cases the etiologic factor will be found in the pharynx and larynx rather than the thymus, as is so often reported. The thymus shadow is found enlarged in more than 40 per cent of normal infants. The usual roentgenographic studies of the thymus are inaccurate and are apt to give false impressions. The size of the shadow of the thymus varies in the different phases of the cardiac and respiratory cycles. The author does not feel that deaths that occurred during or following anesthetics could be attributed to an enlarged thymus. Operation should be postponed and careful preoperative care should be given all patients who show evidence of infection of the upper respiratory tract, renal or cardiac disease, fever, marked anemia, malnutrition or any other condition that might increase the operative risk. The selection of a competent anesthetist cannot be too strongly advised. All allergic patients to be operated on should be tested for the anesthetic to be administered.

Modifications of the Laryngofissure Operation.—The modifications of Loré of the laryngofissure operation are based on a minute study on forty cadavers, supplemented by operative experience. This operation is not recommended in advanced intrinsic cases of carcinoma. Local or general anesthesia may be used. If a preliminary tracheotomy is performed, two incisions are made in the midline. The incision for the tracheotomy is started at the lower border of the cricoid cartilage and extended to the upper border of the manubrium sterni. Should the length of the neck permit, the suprasternal space is avoided. The dissection is carried down in the midline to the pretracheal fascia and the isthmus of the thyroid, immediately below which the trachea will be opened. Before the tracheal rings are opened a few drops of from 5 to 10 per cent solution of cocaine are injected directly into the trachea. All bleeding must be controlled and all clamps removed. The trachea is opened. If the operation is to be continued under general anesthesia, a curved metal tube attached to a rubber tube is introduced into the trachea and the anesthesia continued through it. The rubber tube is fixed to the incised skin by means of a suture, and light packing about the tube prevents leakage into the trachea. The thyrotomy skin incision is then made from the body of the hyoid bone to the upper border of the cricoid cartilage and down to the level of the superficial layer of the deep cervical fascia. The cartilage is cut through by means of the Clerf saw and the larynx is opened. A V-shaped incision is made in the thyrohyoid membrane. All bleeding points after removal of the mass are easily seen and ligated. Before the soft tissues and growth from the cartilage are dissected, a light gauze strip packing inserted into the trachea through the laryngofissure will prevent any secretions and blood from getting into the trachea. The dissection of the diseased tissue from the cartilage is best begun with a knife, the operator making sure that the plane of cleavage between the perichondrium and the cartilage is reached. A Freer separator or any thin blunt dissector is used to continue the separation. This dissection must go wide of the growth, especially in the subglottic area. Then by means of curved scissors the entire mass is removed, including with it or not, as the case may require, the vocal process or more of the arytenoid cartilage. The feeding tube is introduced through the nose before the larynx is closed. Before the wound is closed, all blood and secretions are aspirated from above the tracheal packing and the packing is removed. At no time has the author found it necessary to suture the incision in the thyrohyoid membrane. The two halves of the thyroid cartilage are allowed to come together. The muscles and then the fascia are brought together with interrupted sutures. The skin wound is closed by means of the so-called Stewart suture. A small gauze roll dressing is kept in place by means of stay sutures. The upper and lower parts of the tracheotomy wound are closed after a tracheotomy tube has been introduced, and the usual dressings are applied. The tracheotomy tube is removed as soon as possible. While it is in place, careful and constant suction is to be used through it. All sutures are removed between the fifth and seventh days and the patient is allowed out of bed as soon as possible.

Archives of Dermatology and Syphilology, Chicago

28: 765-918 (Dec.) 1933

Relationship Between Lupus Erythematosus and Tuberculosis: Critical Review Based on Observations at Necropsy. H. Keil, New York.—p. 765.

Nitritoid Crisis Due to Bismuth: Report of a Case. D. T. Gandy, Houston, Texas.—p. 780.

Herpes Gestationis: Report of Case. R. L. Howard, Cleveland.—p. 782.

Clinical Spectroscopy: Study of Biopsy Material Taken from Patients Receiving Gold Sodium Thiosulphate. L. E. Gaul and A. H. Staud, New York.—p. 790.

Contact Eczema: Rubber Cements as Adhesive in Patch Testing. B. Shelmire, Dallas, Texas.—p. 795.

Erythroplasia of Queyrat. Marion B. Sulzberger and D. L. Satenstein, New York.—p. 798.

Onychogryphosis: Report of an Unusual Case. M. S. Wien and Minnie Oholer Perlstein, Chicago.—p. 807.

Lymphogranuloma Inguinale of the Tongue and Cervical Glands: Report of a Case. D. Bloom, New York.—p. 810.

Drug Eruption: Reaction to Bismuth and Gold Salts: Report of Case. H. Rattner, Chicago.—p. 820.

Pityriasis Rosea: Report of Case Showing a Gigantic Herald Plaque with Unusual Manifestations. C. Greenhouse and Van A. H. Cornell, New York.—p. 823.

Hypertrophic Striae Distensae. M. H. Ebert, Chicago.—p. 825.

*Fungicidal Properties of Certain Clinically Recognized Fungicides: Laboratory Determinations Using the Strickler-Borneman Apparatus and the Henal Vacuum Vaporizer. A. Strickler, Philadelphia.—p. 836.

Presence of Arsenic in Bismuth Preparations. E. R. Russell, Los Angeles.—p. 841.

Attempted Immunization of Rabbits Against Experimental Syphilis. G. E. Wakerlin, Louisville, Ky.—p. 843.

Quantitative Estimates of Hydrogen Sulphide in Lotions Used in Treatment of Acne. H. Goodman, New York.—p. 847.

LXV.—Pityrosporon of Malassez. M. F. Engman, Jr., and O. E. Hagebusch, St. Louis.—p. 855.

Fungicides.—The experiments of Strickler, in developing a formula for the local treatment of epidermophytosis, indicate that potassium iodide appears to possess the property of enhancing the fungicidal power of vaporized iodine. A 3 per cent dilution of salicylic acid and a 20 per cent dilution of benzoic acid seem capable of increasing the fungicidal properties of vaporized iodine to a slight degree. Boric acid was found capable of assisting vaporized iodine slightly. The control experiment with talc alone seemed to show that this substance does not possess any fungicidal or fungistatic properties. However, it may act as an additional barrier and it may be prudent in future chemotherapeutic investigations to use this or some other inert powder so as more closely to simulate experimentally the nonpenetrating mechanism of the human horny layer. The author proposes the following local application for epidermophytosis, based on the laboratory fungicidal tests carried out in the research laboratories of the Skin and Cancer Hospital of Philadelphia, and used for months in its dermatologic clinic: 1.3 Gm. of iodine crystals, 1.9 Gm. of potassium iodide, 1.9 Gm. of salicylic acid, 3.8 Gm. of boric acid and enough 50 per cent alcohol to make 59.1 Gm. This preparation is applied as a paint once or twice a day.

Archives of Otolaryngology, Chicago

18: 731-844 (Dec.) 1933

Pulmonary Symptoms Due to Esophageal Disease. C. Jackson and C. L. Jackson, Philadelphia.—p. 731.
Decompression of the Facial Nerve: Physiology of the Seventh and Ninth Nerves and Movements of the Lid in Facial Paralysis. E. C. Sewall, San Francisco.—p. 746.
Effects of Drugs on Vestibular Reactions. E. L. Ross and A. Olsen, Chicago.—p. 753.
Should Fusospirochetal Infections Be Treated with Arsenicals? Report of Cases. D. T. Smith, Durham, N. C.—p. 760.
Chemical Composition of Pus From Sinuses: Further Observations. S. Israel and H. O. Nicholas, Houston, Texas.—p. 770.
Mucormycosis of the Maxillary Sinus. H. N. Stevenson, New Rochelle, N. Y.—p. 775.
Laryngeal Nerves: Surgical Importance in Relation to the Thyroid Arteries, Thyroid Gland and Larynx. E. F. Ziegelman, San Francisco.—p. 793.
Peculiar Form of Hyperplasia of the Mucous Membrane of the Upper Respiratory Tract. H. B. Orton, Newark, N. J.—p. 809.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

14: 705-768 (Dec.) 1933

Evolution in the Inorganic World. A. Bachem, Chicago.—p. 709.
*Effect of Photothermal Radiations on Cutaneous and Subcutaneous Temperatures: Preliminary Report. W. Bierman, New York.—p. 717.
Erysipelas: Treatment with Ultraviolet Light. N. E. Titus, New York.—p. 722.
Physical Characteristics of Diathermy Machines. A. Hemingway, Minneapolis.—p. 728.
Physical Therapy in Mental Hospitals. C. B. Gaffney, Chicago.—p. 732.

Effect of Photothermal Radiations on Cutaneous Temperatures.—Bierman found that the skin of the forehead, as well as that covering the hands and feet, was able to endure the greatest amount of heat. The heating source was a 260 watt carbon filament lamp held fixed at a distance of 18 inches from the surface of the skin during the experiment. The subject determined his own tolerance. The temperatures developed on the surface of the skin and subcutaneously when different types of heating lamps were used to create heat to the limit of comfortable tolerance were determined by means of thermocouples. The needle containing the thermocouple was inserted under the skin for a distance of one-half inch; the projecting portion of the needle was covered with absorbent cotton. The accuracy of this thermocouple was found to vary within 0.1 degree F. The greatest subcutaneous temperature was caused by the 260 watt carbon filament lamp, 40.9 C. (105.6 F.) and the lowest by the infra-red lamp, 38.9 C. (102 F.). The author concludes that lamps which emanate luminous and near infra-red rays increase the temperature of the subcutaneous area more than lamps, the emanations of which are particularly in the far infra-red region.

California and Western Medicine, San Francisco

39: 361-432 (Dec.) 1933

Insulin-Free Pancreatic Extract and the Circulatory Hormone (Kallikrein of Frey and Kraut): Comparative Study of Their Effects on Angina Pectoris. F. R. Nuzum and A. H. Elliot, Santa Barbara.—p. 361.
Hyperpyrexia Baths and Epilepsy: Chemical and Physiologic Responses of the Body to Hyperpyrexia Baths and Their Significance in the Epileptic Syndrome. Helen Hopkins, Los Angeles.—p. 364.
Carcinoma of the Colon—From a Roentgen Standpoint. C. B. Bowen, Oakland.—p. 368.
*Actinomycosis of the Kidney. T. S. Kimball and R. B. Haining, Los Angeles.—p. 370.
Clinical Tetanus: Study of One Hundred and Thirty-One Cases. H. I. Vener, A. G. Bower and J. E. McKillop, Los Angeles.—p. 374.
The Problem of Dysmenorrhea. L. A. Emge, San Francisco.—p. 380.
*Bismuth Injections in Treatment of Warts: Report of Bismuth Injections in Treatment of Sixty-One Cases of Warts at the Cowell Memorial Hospital of the University of California. C. J. Lunsford, R. R. Thomson, G. W. Binkley and D. S. Fox, Oakland.—p. 385.
Female Bladder Injuries Incident to Surgery. W. E. Stevens, San Francisco.—p. 388.
Treatment of Neck Glands in Cancer of Lip, Tongue and Mouth: Study of Present-Day Practice. O. H. Pfluger, San Francisco.—p. 391.
Human Amebiasis: Review of Seven Hundred Cases Expressing One Thousand Nine Hundred and Sixty-One Complaints. L. M. Boyers, Berkeley.—p. 397.
Carcinoma of the Breast: Its Roentgen Treatment, with Especial Reference to Inoperable Case. J. M. Rehfisch and L. H. Garland, San Francisco.—p. 401.

Actinomycosis of the Kidney.—Kimball and Haining report a case in which actinomycotic lesions were found in the left kidney and the right lung. If the multiple abscesses found at necropsy had been present in the roentgenograms taken two months before death, suggestive shadows would surely have been observed. The authors conclude that the actinomycotic organisms reached the lung in less than two months. Probably the first attack on the kidney took place several months, possibly a few years, before the patient died. When actinomycosis affects the lungs primarily it tends to produce a large solitary abscess. The finding of eight or ten small discrete abscesses argues strongly for an actinomycotic pyemia, and in this case the source of the pyemia was probably the abscess of the left kidney or its extension along the spermatic cord. Actinomycosis of the kidney may break its confines by extension and distant metastasis. In this instance the only recorded clinical evidence that might have led to a careful investigation of the left kidney was left-sided, upper abdominal pain lasting more than a month. Actinomycosis confined to the kidney may remain practically symptomless even when a large portion of the kidney is involved. In the absence of suggestive history, the diagnosis of renal actinomycosis has been made by pyelographic indications of renal tumor, by the demonstration of actinomyces in the urine and by the discovery of the fungus in postoperative sinuses. When it can be shown that actinomycosis is confined to one kidney, the prognosis is quite hopeful if nephrectomy can be performed. Supplementary measures of attested value are chiefly the administration of iodides locally and systemically, the use of radium in the wound and of x-rays over the area of the wound.

Bismuth Injections in Treatment of Warts.—Lunsford and his associates treated sixty-one cases of warts with bismuth injections. In fourteen treatment was discontinued because of illness, local pain, interference with work and lack of cooperation; of the remaining forty-seven patients thirty-nine were adults and eight were children. Thirty-seven of the adults were given intramuscular injections of 1 cc. of bismuth salicylate into the gluteal region at weekly intervals. Of the thirty-nine adults who cooperated, eleven were cured. Adults who were clinically cured received from one to sixteen injections of bismuth salicylate, with an average of 5.5 injections each. An average of 7.5 injections was given in those cases in which treatment failed, the greatest number being fourteen. Two adult patients were cured after one injection.

Canadian Public Health Journal, Toronto

24: 555-596 (Dec.) 1933

Papworth: The Parent Village Settlement for Tuberculosis. H. Rolleston, Cambridge, England.—p. 555.
*How to Reduce the Cancer Mortality. J. C. Bloodgood, Baltimore.—p. 562.
Saskatchewan's Program for Cancer Control. R. O. Davison, Regina, Sask.—p. 566.
Rural School Sanitation. W. C. Millar, Toronto.—p. 572.
*Treatment of Vulvovaginitis in Children. S. C. Peterson, Winnipeg, Manit.—p. 577.
Cross Connection Dangers in Plumbing. G. H. Ferguson, Ottawa, Ont.—p. 580.

How to Reduce the Cancer Mortality.—According to Bloodgood, cancer never begins in a healthy spot. This abnormal spot must be looked on as a new growth or a tumor, but the cells at first, though abnormal, are not yet malignant. The usual verified cause of this abnormal spot not yet cancer is chronic inflammation and single or repeated injury. The cure of this spot will prevent cancer. In some instances it may be cured by removing the cause. In other instances not only the cause but the spot itself must be removed. The chief protection against cancer is the same as for heart disease—periodic precautionary examinations and measures by a member of the medical or dental profession selected while one is well. Knowledge is sufficient today and there are enough trained individuals in the two professions to accomplish this prevention and to increase the possibilities of a cure of the fully developed cancer. New discoveries are not needed to place cancer among the insignificant diseases. Today, if all persons would give the medical and dental professions an opportunity from birth to old age to attempt to protect them from heart disease and cancer, there is no question that life would be a little longer and with much less suffering.

Treatment of Vulvovaginitis in Children.—Peterson treated thirty-five cases of gonorrheal vulvovaginitis in chil-

dren during the year 1931. The children were treated daily according to the following general schedule: 1. A 1:1,000 solution of acriflavine hydrochloride was injected into the urethra until the urine was repeatedly free from pus. 2. The entire vulvar mucous membrane was painted with a 2 per cent solution of mercurochrome. 3. The vagina was filled with an ointment of 1 per cent mercurochrome in equal parts of petrolatum and hydrous wool fat. A light pad and a T bandage were applied to retain the ointment. 4. A hot sitz bath of a duration of fifteen or twenty minutes was given daily. 5. The pelvis was baked in carbon lamp appliances from half an hour to an hour daily. 6. Potassium permanganate douches (1:10,000) were given when the discharge was excessively purulent or offensive. 7. Silver nitrate was applied to the urethra and vagina twice a week after the first month of treatment. 8. The hymen was incised when necessary for efficient drainage. 9. The cervix was inspected through an endoscope and when found to be affected was treated with a 2 per cent solution of acriflavine hydrochloride, 5 per cent mercurochrome or from 2 to 5 per cent silver nitrate. 10. After the first month of routine treatment, gonococcus mixed vaccine was given in four injections: first dose, 0.15 cc.; on the third day, 0.2 cc.; on the sixth day, 0.25 cc., and on the tenth day, 0.3 cc. 11. Cod liver oil was given three times a day during the winter months. Smears of the urethra, vagina and rectum were taken on admission and periodically during the treatment. When three or four smears were negative for pus as well as for gram-negative cocci, the children were put under observation for two or three weeks, during which time they were examined every other day until discharged from the hospital. On discharge they were instructed to report for examination every two weeks for two or three months. No arthritis developed in any of these cases. There was not a single relapse and none of the children became "pelvis conscious."

Delaware State Medical Journal, Wilmington

5: 275-294 (Dec.) 1933

Early Recognition of Cancer. T. S. Cullen, Baltimore.—p. 281.

Illinois Medical Journal, Chicago

64: 493-582 (Dec.) 1933

The Veterans' Organizations and the Medical Profession. F. O. Fredrickson, Chicago.—p. 523.

American Academy of Pediatrics in the State of Illinois. G. E. Baxter, Chicago.—p. 525.

Pneumoperitoneum and Surgery in Management of Abdominal Adhesions. B. H. Orndoff, Chicago.—p. 529.

Meningococcus Meningitis: Further Clinical Study. M. P. Borovsky, Chicago.—p. 532.

Diabetes Mellitus and Essential Hypertension: Theory as to Their Etiology and Treatment. J. H. Hutton, Chicago.—p. 539.

Treatment for General Paresis by Means of the Electric Cabinet, Arsenicals and Typhoid Vaccine. E. T. Hoverson and G. W. Morrow, Kankakee.—p. 547.

Diathermy Electrode Based on Entirely New Principles. H. E. Kimble and H. J. Holmquest, Chicago.—p. 550.

Roentgen Visualization of the Biliary Tree Following a Barium Meal. H. A. Singer and D. H. Wagner, Chicago.—p. 552.

Innocent Bystander. J. P. Simonds, Chicago.—p. 555.

Complicated Fractures of Both Bones of the Leg and Their Treatment. E. B. Montgomery, Quincy.—p. 557.

Medical Management of Hepatic Disease. C. A. Elliott, Chicago.—p. 560.

Effects of Aqueous Solutions on Nasal Ciliated Epithelium. I. F. Barnett, Chicago.—p. 562.

Surgical Treatment of Spontaneous and Traumatic Detachment of the Retina. C. F. Yerger, Chicago.—p. 563.

Trichomonas Vaginalis: Report of Three Hundred Cases in Pregnancy with Complete Puerperal Records. E. A. Crown, Chicago.—p. 568.

Medical Leadership Among Lay Groups. Lena K. Sadler, Chicago.—p. 571.

Diagnosis and Treatment of Anemias of Infancy. A. F. Abt, Chicago.—p. 572.

Indiana State Medical Assn. Journal, Indianapolis

26: 591-634 (Dec. 1) 1933

Considerations in the Management of Functional Disorders of Menstruation. N. K. Forster, Hammond.—p. 591.

Infection in Petrous Pyramid. J. W. Carmack, Indianapolis.—p. 596.

Treatment of Syphilis. J. R. Brayton, Indianapolis.—p. 597.

Ulcerative Intestinal Tuberculosis. A. E. Soudah, Indianapolis.—p. 599.

The Abdominal Triad. L. A. Malone, Terre Haute.—p. 602.

Journal of Experimental Medicine, New York

58: 649-766 (Dec. 1) 1933

Methods and Effects of Increasing Urinary Constituents in the Body. F. W. Hartman, Detroit.—p. 649.

Cultivation of Pseudorabies Virus. E. Traub, Princeton, N. J.—p. 663.

Action of Type-Specific Hemophilus Influenzae Antiserum. Margaret Pittman, New York.—p. 683.

Concerning Relative Response to Blood Gains and Blood Losses, and Habituation to Excess of Blood Pigment. M. Dick, New York.—p. 707.

Chemo-Immunologic Studies on Soluble Specific Substance of Pneumococcus: I. Isolation and Properties of Acetyl Polysaccharide of Pneumococcus Type I. O. T. Avery and W. F. Goebel, New York.—p. 731.

Journal of Nervous and Mental Disease, New York

78: 581-712 (Dec.) 1933

Multiple Neurofibromatosis with Malignant Degeneration: Three Cases. A. H. Jackson, Washington, Conn.—p. 581.

Polycythemia Vera and Its Neuropsychiatric Features. N. W. Winkelman and M. A. Burns, Philadelphia.—p. 597.

Rigidity Following Ablation of Motor Cortex in Monkeys. J. C. McKinley and N. J. Berkwitz, Minneapolis.—p. 604.

*Decerebrate Rigidity After Cranial Injury. S. Vernon, Willimantic, Conn.—p. 627.

Pathology of Spasmodic Torticollis with Note on Respiratory Failure from Anesthesia in Chronic Encephalitis. R. R. Grinker and A. E. Walker, Chicago.—p. 630.

Decerebrate Rigidity After Cranial Injury.—Vernon reports a case of decerebrate rigidity in a man who was admitted to the hospital one hour after an automobile accident. When picked up, his entire body was noted to be in a rigid state. He was brought to the hospital unconscious and died. Necropsy revealed a man of about 25 in rigor mortis. There were scalp wounds and a depressed fracture of the skull on the right side. The depression was 2 cm. in diameter. A subdural hematoma lay beneath the depressed fracture, but there was no gross evidence of injury to the brain tissue in this area, which was 1 inch posterior to the middle meningeal artery midway between the vertex and the level of the external meatus. About 5 cm. above the point of fracture there was a ruptured meningeal vein with considerable hemorrhage about it. Subarachnoid hemorrhage extended also over the cortex of the left hemisphere. Section of the brain revealed hemorrhage in the right optic thalamus about 1 cm. in diameter. Hemorrhage in the third ventricle appeared as a clot on the choroid plexus. Section of the pons revealed widely distributed punctate hemorrhage. The lungs showed pulmonary edema. The heart and abdominal viscera were normal. It was difficult to correlate the change found in the brain at necropsy with the clinical observations. However, it was apparent that hemorrhage was extensive enough to cause in effect transection of the brain stem. The diffuse hemorrhage in the pons probably was most responsible for this condition. There was a very distinct disturbance of temperature regulation, since 109.4 F. was noted about five hours after the injury. Elevated temperature undoubtedly hastened the termination of function of the already injured nerve centers. It has been stated that pontile hemorrhage leads to high temperature.

Journal of Pediatrics, St. Louis

3: 813-950 (Dec.) 1933

*Treatment of Chorea by Induced Fever. Lucy Porter Sutton and Katherine G. Dodge, New York.—p. 813.

Treatment of Pneumonia in Infants and Children with Antipneumococcus Serum. Rosa Lee Nemir, New York.—p. 827.

Syphilis and Prematurity, with Especial Reference to Use of Stovarsol in Prophylactic and Curative Treatment of Congenital Syphilis. A. C. Ramhar, Chicago.—p. 841.

Growth Problems: II. Basal Metabolic Rate Variations in Relation to Body Build, Adolescence and Allergy in Children. W. P. Lucas, Helen Brenton Pryor, C. Bost and S. T. Pope, Jr., San Francisco.—p. 856.

Multiple Congenital Rib and Spinal Deformities: Report of Case. J. H. Shain, Long Island City, N. Y.—p. 870.

Vitamin D Deficiency: Tetany in Infants Without Rickets. H. Bakwin and Ruth Morris Bakwin, New York.—p. 880.

Advantages of Strained Solids in the Early Months of Infancy. M. M. Glazier, Boston.—p. 883.

Critical Clinical Study of Various Infant Foods: III. Fresh Whole Milk Modification Without Fat Deficiency. A. G. De Sanctis, J. D. Craig and Helen L. Fales, New York.—p. 891.

*Chronic Interstitial Nephritis with Dwarfism: Case Report. J. W. Amesse and M. H. Black, Denver.—p. 902.

Treatment of Chorea by Induced Fever.—Sutton and Dodge used intravenous injections of typhoid-paratyphoid vaccine as a means of inducing fever in 150 attacks of chorea.

Comparison of the duration of chorea in the hospital in 150 attacks treated by other methods show that the duration of the attacks has been reduced from an average of 27.4 days in the mild untreated cases to 5.72; from 44 days in the untreated moderate cases to 8.56, and from 62.4 days in the severe untreated cases to 15.8 days, in the treated cases. Therefore the authors conclude that fever therapy is a satisfactory method of treating chorea. So far they have had about a 98 per cent follow up of their cases. The number of recurrences is relatively small, but since the treatment has been in use only about two and a half years and since chorea may recur after a lapse of a number of years, their present figures on recurrences have no final value.

Chronic Interstitial Nephritis with Dwarfism.—Amesse and Black present a case of renal dwarfism in a girl of 4 whose mother was a morphine addict. The dwarfism is so symmetrical that the secondary or Brissaud type, in which pluriglandular insufficiency is paramount, can safely be excluded. The nonprotein nitrogen and the creatinine of the blood are moderately increased, but a disturbed relation between calcium and phosphorus is not shown. The most common symptom of renal rickets, genu valgum, is present, and the deformity has been much exaggerated during the past two months since the child's improved physical state permits more activity. While further evidence of rickets is absent, it has been recognized since the earliest observations of such conditions were recorded that the bone changes and the resulting deformities of this disease do not appear until relatively late. Mitchell gives the average age of onset in thirty-two cases as 5.16 years, and so many develop the syndrome at puberty that it is frequently known as the rickets of adolescence. Lathrop maintains that roentgenograms may be consistently negative for rickets in well defined cases, and others consider the skeletal changes quite independent of that disease.

Journal of Urology, Baltimore

30: 639-754 (Dec.) 1933

Relation of Vitamin A and Vitamin D to Urinary Calculus Formation. A. R. Bliss, Jr., G. R. Livermore and E. O. Prather, Jr., Memphis, Tenn.—p. 639.
Pelvic Leukoplakia in a Horseshoe Kidney. L. R. Reynolds and N. J. Howard, San Francisco.—p. 653.
Metastatic Tumors of the Ureters. J. D. Kirshbaum, Chicago.—p. 665.
Nonloosable Filiform. G. R. Livermore, Memphis, Tenn.—p. 679.
New Forward Looking Urethroscope. O. S. Lowsley, New York.—p. 681.
New Catheter Passing Device. O. S. Lowsley, New York.—p. 689.
New Cystoscope. L. Buerger, New York.—p. 695.
*Roentgen Visualization of Posterior Urethra. R. H. Flocks, Iowa City.—p. 711.
Presentation of a New Cautery Punch. J. R. Caulk, St. Louis, and E. M. Kackley, Soda Springs, Idaho.—p. 737.

Roentgen Visualization of Posterior Urethra.—Flocks describes a method for roentgenologic study of the male urethra and bladder. The bladder is filled with a 2.5 per cent solution of sodium iodide, and a cystogram is taken centering over the bladder with the patient in the dorsal position. The bladder is emptied completely and irrigated thoroughly with sterile water. A 30 cc. Luer syringe is filled with an iodized oil and gum tragacanth mixture. The patient is placed in the oblique position with the tube centered over the base of the bladder, the right thigh is flexed to about 45 degrees and the left thigh is extended, the patient being on the right side. The bladder is filled slowly with air, which is stopped as soon as the patient has the first sensation of fulness of the bladder; then stereoscopic air cystograms are taken. About 30 cc. of the air is removed with the syringe and the urethral catheter is removed while the terminal portion of the urethra is held closed with the left hand. The Luer syringe with the contrast medium is taken up in the right hand, the adapter is inserted into the urethra and the urethra is held closed about the adapter with the left hand. The assistant places the lead plate over the operator's left hand and arm. The contrast medium is injected slowly into the urethra. After about 15 cc. has been injected, a varying amount of resistance is felt owing to the contraction of the sphincter. The injection is continued slowly until about 20 cc. has been injected and is continued while the first roentgenogram is taken. The second film is placed into position and the remainder of the contrast medium is injected while this film is exposed. The syringe and the adapter are removed and a catheter is inserted into the bladder. The bladder and urethra are carefully washed out with sterile water. It is possible by the use of the cysto-urethrogram to determine quite accurately the nature of the anatomic deformity in the prostatic urethra and at the neck of the bladder.

Medical Bull. of Veterans' Adm., Washington, D. C.

10: 1-78 (July) 1933

Residual Effects of Warfare Gases: Use of Phosgene Gas, with Report of Cases. H. L. Gilchrist and P. B. Matz.—p. 1.
Development of Intravenous Urography. B. A. Moxness, Perry Point, Md.—p. 37.
Bronchiectasis: Its Prevalence and Importance. H. P. Marvin.—p. 41.
Functional Circulatory Stasis of Cerebrospinal Axis. A. P. Smith.—p. 44.

Minnesota Medicine, St. Paul

16: 715-776 (Dec.) 1933

The Medical Profession Versus Racketeering. J. G. Murray, St. Paul.—p. 715.
Modern Conception of Chronic Arthritis. M. J. Shapiro, Minneapolis.—p. 719.
General Management of Tuberculosis. E. S. Mariette, Oak Terrace.—p. 728.
First Infection Type Tuberculosis. J. A. Myers, Minneapolis.—p. 735.
Appendicitis in the Tuberculous. L. F. Sieffens, Nopeming.—p. 742.
Reservoirs of Echinococcus in Minnesota. W. A. Riley, St. Paul.—p. 744.
Sarcoma of the Uterine Cervix. M. Nordland and L. M. Larson, Minneapolis.—p. 745.
Management of Amebic Dysentery. R. E. Rock, St. Paul.—p. 748.

New England Journal of Medicine, Boston

209: 1085-1136 (Nov. 30) 1933

Spontaneous Rupture of Stomach During Labor. J. R. Miller, Hartford, Conn.—p. 1085.
*Use of Sodium Dehydrocholate as a Clinical Test of Velocity of Blood Flow. S. L. Gargill, Boston.—p. 1089.
Cancer of Male Generative Organs. F. L. Hoffman, Wellesley Hills, Mass.—p. 1093.
Operative Curability of Carcinoma of Stomach. L. Parsons, Boston.—p. 1096.
Functional Bundle-Branch Block. F. B. Carr, Worcester, Mass.—p. 1101.
Studies of Reproduction in the Rat: I. Effect of Changes in Protein on Fertility, Pregnancy and Lactation. D. Macomber, Boston.—p. 1105.
The Boston Lying-In Hospital Fifty Years Ago. A. Worcester, Waltham, Mass.—p. 1109.
Review of Gastro-Intestinal Surgery in 1932. M. A. McIver, Cooperstown, N. Y.—p. 1113.

Clinical Test of Velocity of Blood Flow.—Gargill employed the following method in clinically testing the velocity of the flow of the blood: All tests were performed with the subjects in the recumbent position and under strict metabolic conditions. The contents of a 10 cc. ampule of a 20 per cent solution of sodium dehydrocholate were aspirated in a 10 cc. sterilized Luer syringe. A vein in the antecubital space of the arm was entered and 3 cc. of sodium dehydrocholate was injected as rapidly as possible. The time taken for injection as well as the time of onset of the bitter taste were registered by means of a stop watch. The time elapsed from the beginning of injection to the onset of the bitter taste was recorded as the "arm to tongue circulation time." After an interval of one or two minutes another 3 cc. of sodium dehydrocholate was injected and the circulation time was again measured. The last 4 cc. of sodium dehydrocholate in the syringe was used to obtain a third measurement. These three measurements usually checked within one second or a fraction of a second. In fifty normal subjects the average arm to tongue circulation time was fifteen seconds. This compares favorably with the average arm to arm circulation time found in fifty-three normal persons by Blumgart, using the radioactive method. A crude pulmonary circulation time was obtained by injecting sodium dehydrocholate into the external jugular vein. The average jugular to tongue circulation time was 11.8 seconds in twelve normal subjects. The circulation time was measured with sodium dehydrocholate in various pathologic states, including hyperthyroidism, secondary anemia, arterial hypertension, pulmonary emphysema and congestive failure. The results were in accord with those obtained by Blumgart with the more accurate radioactive method. In the amounts utilized, sodium dehydrocholate produced no untoward reactions in more than 150 patients. The sodium dehydrocholate test recommends

itself to the clinician by its simplicity, its safety and the readiness with which it can be repeated and used at the bedside or in the office. The simplicity and safety of the sodium dehydrocholate method should enable the clinician to make use of the measurement of the velocity of the flow of the blood as an additional aid in diseases associated with dyspnea and edema.

New York State Journal of Medicine, New York

33: 1365-1422 (Dec. 1) 1933

*Preventing Loss of Weight in the New-Born. I. N. Kugelmass, Ruth E. L. Berggren and Mildred Cummings, New York.—p. 1365.
Treatment of Common Forms of Dropsy. N. B. Foster, New York.—p. 1373.
Practical Application of Radiosensitivity and Tumor Grading. D. Quick, New York.—p. 1376.
Rat-Bite Fever in Children: Clinical Case. F. Vander Bogert, Schenectady.—p. 1379.
Measles in Four Central New York Counties for 1932. F. W. Sears, Syracuse.—p. 1381.
Hypodynamic and Hyperdynamic Hearts. A. W. Holmes, Watkins Glen.—p. 1383.
Granulopenia: Case Report. T. H. Argue and R. J. Shafer, Corning.—p. 1385.
Hearing Impairment in School Children. R. Beatrice Rossell, Buffalo.—p. 1387.
Renal Manifestations of Hydatid Disease: Report of Case. J. H. Borrell and J. M. Barnes, Buffalo.—p. 1390.

Preventing Loss of Weight in the New-Born.—Kugelmass and his associates emphasize that the initial loss of weight in the new-born is the result of dehydration and semistarvation, and it can be prevented by the administration of a solution consisting of 6 per cent gelatin (p_H 6.2), 3 per cent dextrose and 0.5 per cent sodium chloride at two hour intervals throughout the twenty-four hour cycle immediately after birth. The gelatin hydrates blood and tissues, it raises the heat of the body by virtue of its specific dynamic action, and it reduces the clotting time. Dextrose brings the new-born hypoglycemia to normal. Sodium chloride raises the initial low blood chloride and favors hydration. The average loss of weight in new-born infants receiving the hydrating solution was 1.7 per cent, the irreducible minimum in comparison with the average loss of 7 per cent. The characteristic clinical picture of the new-born is a result of the shock of birth, more effectively combated by a hydrating solution than by milk mixtures the first two or three days of life. Preventing the loss of weight in the new-born produces rapid disappearance of the so-called physiologic apathy, somnolence and stupor secondary to the shock of birth and the compensated acidosis universally present.

Ohio State Medical Journal, Columbus

29: 737-808 (Dec. 1) 1933

Throat and Ear Problems from a Pediatric Point of View. C. W. Wyckoff, Cleveland.—p. 757.
Spinal Cord Changes in Pernicious Anemia. C. E. Kiely, Cincinnati. p. 761.
Mastoiditis and Its Bone and Joint Complications. S. S. Quittner and R. S. Reich, Cleveland.—p. 764.
Chronic Encephalitis Associated with Gallbladder Infection. S. R. Salaman, Toledo.—p. 767.
Lead Poisoning Followed by Diffuse Vascular Disease. Z. T. Wirtschafter, Cleveland.—p. 771.

Public Health Reports, Washington, D. C.

48: 1443-1464 (Dec. 1) 1933

Methylene Blue in Treatment of Hydrocyanic Acid Gas Poisoning. J. A. Trautman.—p. 1443.

48: 1465-1486 (Dec. 8) 1933

Malaria in Narcotic Addicts at the United States Penitentiary Annex, Fort Leavenworth, Kansas. C. K. Himmelsbach.—p. 1465.
Specificity of Immunity Elicited by Mouse Sarcoma 180. H. B. Andervont.—p. 1472.

48: 1487-1512 (Dec. 15) 1933

Estimation of Tissue Phenols: Distribution of Phenol in Tissues of Normal and of Poisoned Rabbit. M. I. Smith.—p. 1487.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

9: 97-216 (Dec.) 1933

Larval Phase of Uncinariasis. B. K. Ashford, San Juan; G. C. Payne and F. Payne, New York.—p. 97.
Studies on Schistosomiasis Mansoni in Puerto Rico: I. History of Schistosomiasis in Puerto Rico. E. C. Faust, New Orleans.—p. 154.
Observations on Dermatomycosis in Puerto Rico: Report on a Case of Chromoblastomycosis. A. L. Carrión and E. Koppisch, San Juan.—p. 169.
Studies of Relationship Between Atmospheric Phenomena and Human Physiology. A. Martinez Alvarez, San Juan.—p. 210.

Radiology, St. Paul

21: 513-612 (Dec.) 1933

Primary Malignant Tumors of the Foot: Report of Thirty-Seven Cases. B. F. Schreiner and W. H. Wehr, Buffalo.—p. 513.
Roentgen Treatment of Benign and Malignant Lesions of Prostate. L. E. Schmidt, T. P. Graner and E. L. Jenkinson, Chicago.—p. 521.
Pulmonary Tuberculosis: Roentgenologic Application of a Clinical Classification. H. K. Taylor, New York.—p. 529.
Effect of Roentgen Rays on Time of First Cleavage in Marine Invertebrate Eggs: II. Differential Recovery and Its Influence When Different Methods of Exposure Are Used. P. S. Henshaw, C. T. Henshaw and D. S. Francis, New York.—p. 533.
American Pioneers in Radium Therapy. B. G. P. Shafiroff, Brooklyn. p. 541.
*Scientific Control of Radiographic Results. C. Weyl, S. R. Warren, Jr., and D. B. O'Neill, Philadelphia.—p. 546.
Pathogenesis of Acute Silicosis. R. Pomeranz, Newark, N. J.—p. 556.
New Contrast Medium for Use in Uterosalpingography: Preliminary Report. T. Neustaedter, D. E. Ehrlich, J. C. Du Bois and G. R. Blalock, New York.—p. 568.
Thoms' Method of X-Ray Pelvimetry and Cephalometry: Discussion of Advantages and Case Reports. J. M. Freiheit, Waterbury, Conn.—p. 573.
*Roentgenologic Diagnosis of Rupture of Liver and Spleen as Visualized by Thorotrast. W. F. Burke and J. P. Madigan, Washington, D. C.—p. 580.

Scientific Control of Roentgenographic Results.—Weyl and his associates describe tests that will aid roentgenologists in controlling variations within their laboratory which cause them difficulty in diagnosis and to collect data that may be analyzed for the purpose of standardizing radiographic technic. It is generally possible to arrange that the roentgen beam directed to about 1 square inch near a corner of each film shall be unobstructed. A two-step aluminum ladder, with steps one-fourth and two-fourths inch thick, can be fixed in position in the cassette holder over the area of the film. For every roentgenogram taken, there will be a record of density and of contrast in terms of these aluminum step thicknesses, which may be compared with other roentgenograms. Not only may this comparison be made between roentgenograms of a given type taken in one laboratory, but the results of several laboratories may also be compared. Analysis of the electrical problems concerned would be considerably facilitated by the collection of data from a number of laboratories throughout the country.

Roentgenologic Diagnosis of Rupture of Liver.—Burke and Madigan point out that thorium dioxide sol (thorotrast) is of practical use in the diagnosis of traumatism of the liver and spleen when the physical signs are obscured by any cause whatever. It apparently exercises no deleterious effects, even when administered to patients having overwhelming infections, and may be administered intravenously immediately on indication of an intra-abdominal hemorrhage. Its use is not contraindicated in injuries involving the liver and spleen. One half of the usual dose was sufficient to produce a shadow heavy enough for diagnosis, and a roentgenogram may be taken four hours after such an injection.

Texas State Journal of Medicine, Fort Worth

29: 479-546 (Dec.) 1933

Addison's Disease: Report of Two Cases Treated with Suprarenal Cortical Extract (Eschatin). Alvis E. Greer, Houston.—p. 483.
Osgood-Schlatter's Disease. W. E. Huddleston, Galveston.—p. 488.
Treatment of Compound Fractures. T. E. Christian, San Antonio. —p. 491.
Use of Well Leg Traction in Fractures of the Lower Extremity. J. R. Bost, Houston.—p. 494.
Open Reduction of Fractures. H. O. Smith, Marlin.—p. 502.
Open Reduction of Fractures of Long Bones. F. C. Goodwin, El Paso. —p. 505.
Résumé of Some Personal Experiences in Fractures. I. Cohn, New Orleans.—p. 508.
Migraine. R. V. Murray, Austin.—p. 514.
Short Wave X-Rays and Radium in Treatment of Cancer. R. H. Millwee, Dallas.—p. 518.
Grading of Cancer: Its Relationship to Metastasis and Prognosis. A. C. Broders, Rochester, Minn.—p. 520.
Radical Mastoid Skin-Graft. J. T. Robison, Austin.—p. 525.
Treatment of Oral Pathologic Conditions. W. A. Chernosky and M. C. Murphy, Temple.—p. 528.

Wisconsin Medical Journal, Madison

32: 801-872 (Dec.) 1933

Chronic Fevers. J. M. Berkman, Rochester, Minn.—p. 809.
Importance of Blood Grouping in Clinical and Legal Medicine. A. A. Schaefer, Milwaukee.—p. 816.
Suitable Time for Surgery in Children. I. Schulz, Milwaukee.—p. 820.
Nasal Polyps with Radium After Removal. W. A. Ford, Sheboygan. —p. 824.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Pickett-Thomson Research Lab., London

9: 1-640 (Dec.) 1933

Influenza: Part I, with Especial Reference to the Part Played by Pfeiffer's Bacillus, Streptococci, Pneumococci, etc., and the Virus Theory. D. Thomson and R. Thomson.—p. 1.

British Journal of Dermatology and Syphilis, London

45: 493-546 (Dec.) 1933

The Real Position of Willan and Bateman's Teaching in Regard to Eczema. H. G. Adamson.—p. 493.

Identity of Adiponecrosis Subcutanea Neonatorum with Sclerema Neonatorum. A. M. H. Gray.—p. 498.

*Infra-Red Photography of Subcutaneous Veins: Demonstration of Concealed Varices in Ulcer and Eczema of the Leg. H. Haxthausen.—p. 506.

Pseudoxanthoma Elasticum. S. E. Sweitzer and C. W. Laymon.—p. 512.

Infra-Red Photography of Subcutaneous Veins.—Haxthausen emphasizes the fact that by infra-red photography it is possible to demonstrate varicose changes in the small and medium sized subcutaneous veins that can be recognized but indistinctly—or not at all—by direct observation or by ordinary photography. This type of varix is found in some cases together with varices of the large veins, while in other cases it constitutes the only form of varix present. In the latter cases, including several of ulcer and eczema of the leg, the foregoing venous changes represent presumably an important part of the condition that heretofore has been designated as "concealed" varices.

British Journal of Ophthalmology, London

17: 705-768 (Dec.) 1933

Intra-Ocular Color Filters of Vertebrates. G. L. Walls and H. D. Judd.—p. 705.

Evolution of Ideas Concerning Retinal Detachment Within Last Five Years. J. Gonin.—p. 726.

*Operation for Relief of Congenital Ptosis. R. A. Greeves.—p. 741.

Operation for Relief of Congenital Ptosis.—Greeves believes that a better result might be gained by attaching the lid to the superior rectus muscle, instead of the converse in operations for the relief of congenital ptosis. He devised the following operation, which may be performed under general or local anesthesia: A controlling suture is inserted in the conjunctiva, immediately above the cornea, and the eye is depressed as far as possible by its means. The superior rectus tendon and its attachment to the globe are then exposed by a horizontal incision through the conjunctiva and a squint hook is passed under the tendon; a silk thread is then pushed under the tendon and the hook withdrawn, the two ends of the thread being secured by Spencer Wells forceps. This thread is now used to control the eye in place of the preliminary conjunctival suture, which may be removed. Next, the upper lid is everted and the conjunctiva above the incision seized by forceps and dissected upward until the upper edge of the tarsal plate is exposed. This edge is gripped centrally by catch forceps, on each side of which a thin strip of tarsus is cut with a fine pair of bent scissors, from without inward and within outward, respectively, each strip being left attached centrally and the width of the uncut area of the tarsal plate between the strips being about the same as that of the superior rectus tendon: the strip of tarsal tissue should be as long as possible. A number 4 needle, with number 1 silk, is passed through the end of one of the strips and again through the corresponding edge of the superior rectus tendon; a similar suture is passed through the other strip and the other edge of the tendon. The sutures are drawn tight without being tied, in order to judge the relative positions of the eye and eyelid: the position of the edge of the lid should slightly overlap the upper part of the cornea. If the position of the lid is not correct, those parts of the sutures which have been passed through the tendon should be withdrawn and reinserted in the tendon in a suitable position. Great care must be taken to prevent exposure of the cornea during the healing stage. It is better not to sew the lids together; the best form of dressing is a sausage-shaped pad placed over the upper lid and kept in place by strapping and a bandage. The sutures may be removed in about ten days.

British Journal of Urology, London

5: 323-456 (Dec.) 1933

Tumors of the Renal Pelvis and Ureter. S. Pascual.—p. 323.

Pyelography by the Descending Route. Von Lichtenberg.—p. 339.

Surgery of the Neck of the Bladder. G. Marion.—p. 351.

British Medical Journal, London

2: 1007-1056 (Dec. 2) 1933

How Do Drugs Act? W. L. Brown.—p. 1007.

Housing Problem, with Especial Reference to Present Position. C. K. Millard.—p. 1010.

Vallecular Dysphagia. J. E. G. McGibbon and J. H. Mather.—p. 1013.

Certain Intracranial Tumors: Their Variability and Multiplicity. W. E. C. Dickson.—p. 1016.

Fibrosarcoma of Suprarenal Gland. B. S. Cran.—p. 1018.

*Treatment of Compound Fractures of the Tibia. A. Simpson-Smith.—p. 1019.

Lung Abscess Following Tonsillectomy. F. T. Ranson and L. McGolrick.—p. 1020.

*Diverticulum of Duodenum. D. Cromie.—p. 1021.

Treatment of Compound Fractures of Tibia.—Simpson-Smith used the following treatment with unusual success in twenty cases of compound fractures: The patient is anesthetized and the limb is iodined from midthigh to toes. The edge of the wound is closely excised and extended up and down the leg so that an incision of not more than 5 inches is made with its center over the seat of the fracture. The incision goes straight down to, but not through, the periosteum. Careful debridement is effected and the entire area is washed with acriflavine hydrochloride. The incision is continued in the connective tissues immediately above the periosteum round the subcutaneous surface of the tibia and is extended just over the anterior and postero-internal borders, so that 1 inch of bone is "cleared" on each side of the fracture. Lane's forceps are applied to the fragments in such a way that their teeth just grip these borders. An assistant pulls on the foot to secure the necessary amount of extension and the ends of the bone are again washed with acriflavine hydrochloride before they are apposed. A special bone clamp is applied to the already cleared fragments so that it does not disturb the lateral vascular surface of the tibia. Before screwing the instrument "home" the assistant pushes the foot firmly toward the knee in order to press the two fragments hard against each other, thus ensuring that their corresponding serrations interlock accurately. The clamp is fixed, the Lane's forceps are removed and an artificially rigid tibial shaft is thus produced. A sterile gauze roll 5 inches wide is wound round the leg at the site of the fracture above and below the clamp, so that the wound is completely enclosed. The assistant, with his flexed elbows on the operating table, puts the flat of one hand under the knee and the other under the heel. The rest of the limb, from toes to midthigh, is invested in a skin-tight plaster cast. A firm plaster cast is applied in adequate thickness up and down the limb, leaving the bone clamp projecting through its substance. A window is cut through the plaster and gauze around the clamp. The plaster is allowed to dry and the bone clamp is removed. The wound is sutured and a small gap is left at the lower end for drainage, but without incorporating a tube. Dressings and a bandage around the plaster complete the operation. Antitetanic and anti-gas gangrene serum are given as a routine. The plaster cast is removed in from six to eight weeks. Another smaller one is then applied from the toes to just below the knee, and a Böhler "boot" is incorporated. The patient can walk about in this iron for a few more weeks until the union is firm.

Diverticulum of Duodenum.—Cromie reports a case of diverticulum of the duodenum in which the diverticulum proper was composed of a thin layer of muscle with the submucosa and mucosa and measured 2.9 cm. across the base and 2.4 cm. from the base to the apex. The serous coat was not attached to the pouch, but a fold of peritoneum lay in front of it. The symptoms of the author's case did not correspond to any of the five classic groups described by Bensaude, so it is doubtful if there is any definite symptomatology. The symptoms were initiated by the filling of the sac and relief followed its emptying. The vomiting was a predominant feature. The author

cannot see how medical treatment can be of much value if the symptoms are caused by the diverticulum. Diverticula that cause no symptoms should be left alone, but others should certainly be explored. The ideal treatment is excision, but if this is impossible the diverticulum may be invaginated. Complications may call for immediate laparotomy, as in any other abdominal emergency. The author's patient has been relieved of symptoms by operation on the diverticulum for two years.

Clinical Science, London

1: 159-224 (Dec. 21) 1933

Blood Pressure Observations with a New Type of Oscillometer. G. M. Wishart.—p. 159.

*Clinical Observations and Experiments Relating to Burning Pain in Extremities, and to So-Called "Erythromelalgia" in Particular. T. Lewis.—p. 175.

Vasodilatation in the Hands and Feet in Response to Warming the Body. G. W. Pickering and W. Hess.—p. 213.

Burning Pain in Extremities.—Lewis suggests that the term erythromelalgia should be abandoned and that the name erythralgia be employed to designate a peculiar condition of painful redness of the skin, which is common to a number of diseases. The chief manifestations of patients displaying this condition in an extremity are as follows: 1. The skin of the extremity is reddened, and this reddening greatly deepens when the limb hangs down. The reddening of the skin is the result of a relatively toneless condition of the minute cutaneous vessels, and the deepening of the color on dependence is due to passive congestion and does not signify vasodilatation. 2. Burning pain is induced whenever the temperature of the skin rises to a certain level, normally insufficient to produce pain, and this is so whether the heat is brought by an increased flow of the blood or is applied from outside. The same pain may be induced by extreme cold, local friction or tension. When it comes during walking it is chiefly the result of warmth and of friction. When it occurs in a limb allowed to hang down, it is due to hydrostatic vascular tension. There is no evidence that in what are called "attacks" a disturbance occurs in the central nervous system. In tissues in the "susceptible state," vasodilatation may be brought about a little more readily or more conspicuously. There is no evidence that there is any appreciable change in the flow of the blood in the normal foot on changing it from a horizontal to a hanging down position. Severe burning pain of inflamed fingers in Raynaud's disease can be caused by the quick warming of fingers occasioned by a return of the blood to them when they are cold. Normal fingers present the same phenomenon if the range of temperature change is sufficiently increased. Burning pain in the skin may follow firm stroking of the skin in some cases of urticaria factitia, and the stroked skin is subsequently unusually susceptible to warmth. Burning pain is considered to have a similar underlying basis; namely, the release from the damaged tissues of a natural substance, which acts on the pain nerve endings, lowering the threshold of these to tension and to heat, causing them to discharge pain impulses at times even under ordinary conditions of temperature.

Glasgow Medical Journal

2: 193-236 (Dec.) 1933

Chronic Hyperplastic Peritonitis with Chylous Ascites in Case of Rheumatic Carditis, with Auricular Fibrillation of Over Fifteen Years' Duration. G. A. Allan and J. F. Heggie.—p. 193.

Effect of Massage on Metabolism: Survey. D. P. Cuthbertson.—p. 200.

Journal of Laryngology and Otology, Edinburgh

48: 797-900 (Dec.) 1933

*The Leaking Brain Abscess. D. McKenzie.—p. 797.

Nasal Plastic Surgery: Notes. A. B. K. Watkins.—p. 809.

The Leaking Brain Abscess.—McKenzie discusses the spontaneous rupture and gradual discharge of a brain abscess. He states that, while symptoms may be so mitigated by the leakage that the evolution of the disease is spun out, its progress continues to be downward and the end, though delayed, is seldom in doubt. Sooner or later the surgeon must intervene to improve drainage. The intervention will depend on the actual quantity of pus discharged and on the patient's general condition and particular symptoms. Relief to headache and pain, even when complete and lasting, is not sufficient to justify a relaxation of vigilance, for a brain abscess may progress painlessly to a fatal issue. In choosing a site for drainage it is not wise to ignore the selection by nature of a certain point for drainage. Leakage, wherever it occurs, leads to the formation of a sinus with more or less firm and resistant walls. There is round the track an inflammatory zone shutting off the infected from the uninfected meningeal and brain tissues. Within the limits of this area the surgeon can make incisions and insert tubes without much risk of spreading the infection. The apparently out-of-the-way fistula may really represent the site of origin of the abscess, and the stalk may actually be situated at that spot. In any case it would probably be wise to combine drainage through an outlying fistula with drainage through the apparent site of origin, whether it is the nasal sinus or the ear. Or the fistula might be selected to begin with and, if it failed to give the necessary relief, the original site could then be tried. When leakage is taking place through some inaccessible region, a direct opening should be made into the abscess. In the operation itself, safety consists in keeping as much as possible within the confines of the inflammatory zone round the discharging sinus. If the surgeon can offer sufficient drainage to the abscess without too rashly encroaching on the adjoining meninges and brain, he has done all that can be expected.

Lancet, London

2: 1245-1300 (Dec. 2) 1933

Arterial Disease of Extremities. A. D. Wright.—p. 1245.

*Acetylcholine in Paralytic Ileus. A. L. Abel.—p. 1247.

Atypical Teratoma and Spheroidal-Celled Carcinoma of One Germinal Gland Associated with Emunchoidism in an Apparent Female. R. S. Aitken.—p. 1252.

Action of Folliculin and Prolan on Reproductive Organs of Bat During Hibernation. B. Zondek.—p. 1256.

Sorbitol (Sionon) for Diabetics. W. W. Payne, R. D. Lawrence and R. A. McCance.—p. 1257.

Acetylcholine in Paralytic Ileus.—Abel states that acetylcholine is essential for intestinal peristalsis. Factors which produce paresis or paralysis of the intestine do so either by a diminution of the intestinal content of acetylcholine or by increasing the threshold of the nerve impulse, thus rendering the normal quantity of acetylcholine insufficient. The administration of acetylcholine is therefore the correct treatment for these conditions. In some fifty apparently normal postlaparotomies he used acetylcholine as a routine, starting with 0.1 Gm. thirty-six hours after the operation and repeating this dose every six hours until passage of flatus or feces occurs without enemas. This usually happens in from six to twelve hours, but as there was severe general peritonitis in many of these cases the author's impression has been that their postoperative course has given rise to less anxiety than it would have done without the acetylcholine. He feels that many more cases must yet be treated before advising acetylcholine as a routine in the postoperative treatment of every laparotomy. He has made it a practice to give these patients 0.1 Gm. of acetylcholine hourly for six doses. Many unnecessary operations have been avoided and no untoward effects produced in organic obstruction cases. Most patients with severe postoperative distention, gas pains and paresis of the intestine are considerably improved by the administration of acetylcholine by intramuscular injection. In paralytic ileus, acetylcholine appears to be almost specific in curing the condition.

Medical Journal of Australia, Sydney

2: 743-776 (Dec. 2) 1933

Bacteriologic Investigation of Asylum Dysentery Occurring at Mont Park. C. Farran-Ridge and Dora Lush.—p. 743.

Summary of Cholecystography: Normal and Pathologic Gallbladder. D. G. Maitland.—p. 745.

Monocytic Leukemia. F. Tidswell.—p. 752.

Early Diagnosis of Cancer of Cervix Uteri. C. Coghlan.—p. 754.

Therapy of Allergic Manifestations in Nasal Cavities: Note. H. M. Jay.—p. 755.

Tubercle, London

15: 97-144 (Dec.) 1933

Operation of Plombage in Pulmonary Tuberculosis. W. Behrens.—p. 97.

Memorandum on Asbestosis. E. R. A. Merewether.—p. 109.

Condition in 1931 of Patients Discharged from the Trudeau Sanatorium from 1916-1930. F. H. Heise and W. A. P. Hennigar.—p. 120.

Evolution of Tuberculosis in the Human Body. C. A. Stewart.—p. 123.

Annales de Médecine, Paris

33: 1-80 (Jan.) 1934

Aleukemic Megakaryocytic Myelosis: Contribution to Study of Hepatosplenic Syndromes. M. Favre, P. Croizat and A. Guichard.—p. 5.
*Phosphocreosotic Polyneuritides. H. Roger and M. Recordier.—p. 44.
Globular Chlorine Test of Chloruration in Axotemic Nephritides. P. Merklen and H. Gounelle.—p. 64.
Atypical Oxycephaly in Patient Presenting General Weak Mental Dystrophy. P. Michon and J. Harmand.—p. 74.

Phosphocreosotic Polyneuritides.—Roger and Recordier made a study of three forms of polyneuritis, etiologically different but presenting the same symptomatology: polyneuritis due to constant intake of creosote phosphate compounds, as in tuberculous patients, paralysis due to consumption of adulterated jamaica ginger and polyneuritis due to administration of the abortifacient apiol (dimethylmethylene ether and allyl tetroxybenzene). These polyneuritides are characterized almost exclusively by motor symptoms of the paralytic type. They destroy only the Achilles tendon reflexes. Their evolution is long but habitually favorable. They are due to triorthocresyl phosphate, the specific action of which is demonstrated by its cumulative property. This substance was isolated from the extracts of ginger and from apiol compounds and administered to animals, in particular to the hen. The experiments showed a clinical picture analogous to that presented by man, with severe lesions of the peripheral nerves associated with slight alterations of the anterior horns of the spinal cord. The authors corroborate their results by referring to Smith, who for several consecutive days administered to rabbits lethal doses of phenolphosphate of triphenyl, tricresol, triorthocresol and triparacresyl phosphate and concluded that under these circumstances there is no accumulation and that the rabbits survive, while the triorthocresyl phosphate is accumulated in the organism.

Presse Médicale, Paris

42: 129-144 (Jan. 24) 1934

Perfusion of Lung. L. Binet and Madeleine Marquis.—p. 129.
Clinical Forms of Sylvian Vascular Spasms. H. Roger and P. Sarradon.—p. 130.
*Experiences and Reflections on Mechanism of Spinal Analgesia. J. Abadie.—p. 133.

Mechanism of Spinal Analgesia.—Abadie discusses five questions about the technic of intraspinal analgesia. The preliminary withdrawal of spinal fluid does not change the intraspinal pressure enough to alter materially the diffusion of the introduced anesthetic but produces a compensatory current toward the cranium which carries the anesthetic with it. The diffusion of various anesthetics depends in vitro on their specific gravities and on diffusible qualities apparently independent of the specific gravity. Application of in vitro observations to living intraspinal conditions cannot be made. Forceful injection, the author believes, causes the injected anesthetic to rise higher only when it is of greater density than the spinal fluid. The simplest technic possible should be used in spinal anesthesia until some of the points are better elucidated.

Schweizerische medizinische Wochenschrift, Basel

64: 69-92 (Jan. 27) 1934

Etiologic Significance of Tonsils in Neuralgia and Neuritis. G. L. Dreyfus.—p. 69.
*Influence of Trichomonas in Vaginal Secretion on Course of Puerperium. W. Schellenberg.—p. 73.
Gonococcic Sepsis After Surgical Intervention. A. Schweizer.—p. 76.
Little Practiced but Excellent Method for Reaching Retrobulbar Space. F. Ody.—p. 78.

Influence of Trichomonas in Vaginal Secretion on Course of Puerperium.—Schellenberg reviews the literature, showing that the reports about the incidence of trichomonads in the vaginal secretion differ widely. The author's tests on parturient women revealed them present in 19.9 per cent of his cases. He compared the course of the puerperium in women with and without trichomonads in the vaginal secretion and found that the number of complications (increased temperature and prolongation of the puerperium) was only 0.8 per cent higher in the women with trichomonads than in those without. When only the temperature curves were taken into consideration, it was found that the afebrile cases were by 1.6 per cent more frequent in the women without trichomonads in their vaginal secretion, but in spite of this the women with trichomonads could leave the clinic on the tenth day in a larger percentage of cases than could the women without trichomonads. He is convinced that they are of no importance for the course of the puerperium and he is inclined to believe that they are harmless parasites. The author emphasizes that an aseptic parturient canal, that is, one which is free from exogenous micro-organisms, is the most important factor in the prevention of puerperal complications. He thinks that during the last six weeks before delivery the following rules should be observed by the pregnant woman: 1. Coitus should be abstained from. 2. No vaginal douches should be taken without the physician's orders. 3. General baths should be dispensed with in favor of sponge baths. 4. If the use of public toilets is necessary, contamination should be guarded against. 5. Manipulation of the genitalia should be avoided and, if necessary, should be preceded by careful cleansing of the hands. 6. The woman should not be obliged to take care of members of the family who have suppurating wounds. During the six weeks following delivery there should be no coitus, no douches and no tub baths, only sponge baths.

Policlinico, Rome

41: 1-52 (Jan. 15) 1934. Surgical Section

Ethylene Anesthesia. F. Alieri.—p. 1.
*Behavior of Electrolytes of Blood in Intestinal Occlusions. F. Cataliotti.—p. 17.
Relation of Contusions to Infections Due to Staphylococcus and to Bacillus Pyocyaneus. R. Pazzagli and R. Zambelli.—p. 28.
*Anatomic Changes of Gallbladder and Variations of Bacterial Flora of Bile in Cholecystogastro-Entero-Anastomosis. G. Scollo.—p. 40.

Electrolytes of Blood in Intestinal Occlusion.—Cataliotti studied the alterations of the calcium, magnesium and phosphorus content of the blood in ten dogs in which experimental obstruction of the bowel was performed in high, middle and low sites. About twenty-four hours after operation there was a temporary lowering of the blood calcium content, and at the end of the experimentation the calcemic rate was higher than at the beginning. The increase in blood calcium was constant in all experiments and was not influenced by the seat of occlusion. The phosphorus in the blood was also diminished temporarily during the first twenty-four hours, but in its subsequent progressive rise it did not attain values superior to normal and was not influenced by the seat of occlusion. The magnesium increased immediately after operation and continued to increase indefinitely. The values of calcium and phosphorus tended to increase with the aggravation of the clinical picture. The results of the author and those obtained by Ruggeri confirm the report that intestinal occlusion, whether in high, low or medium sites, causes an increase in the calcium and phosphorus of the blood. Hepatic and renal alterations may have great importance for the variations of the blood calcium content. The liver actively participates in calcium metabolism and any alteration of the liver, even if only functional, renders it incapable of retaining its salts. Alterations in the kidney, whether anatomic or functional, show a notable diminution in the elimination of calcium salts and thus a great retention of them in the blood. When normal digestion is disturbed through defective biliary secretion, the excretion of phosphorus by the lower intestine is altered in the form of fecal tricalcic phosphate, and the phosphorus, liberated from its combination with calcium, is absorbed and eliminated by the kidney. If the kidney is altered the phosphorus is retained in the blood in the form of alkaline phosphates and is therefore increased. The author states in conclusion that quantitative changes of the electrolytes calcium, magnesium and phosphorus occur independently of the seat of occlusion.

Changes in Gallbladder in Cholecysto-Entero-Anastomosis.—Scollo experimented on dogs with various types of anastomosis between the stomach, the gallbladder and the intestine and found that, if the animal survives, the cystic bile constantly contains pathogenic micro-organisms irrespective of the type and location of the anastomosis. The infections as well as the invasion of germs in the contents of the bladder are due more to the size of the anastomotic mouth and to the reflux from the digestive tube than to the segment of the digestive tube joined to the gallbladder. The author maintains that, the lower the location of the anastomosis in the gastro-enteric canal, the greater the danger of infection. Bacillus coli is the most commonly found micro-organism in the cystic bile after anasto-

mosis. Next in order are the staphylococcus and the streptococcus. The bacterial flora tends to diminish progressively from the time of operation. Cholecystogastro-entero-anastomosis occasions notable anatomic changes in the gallbladder. The gallbladder is transformed, through its new function of directly discharging the bile, into a canal similar in type to the common bile duct. Histologically, it presents constant traces of inflammation, mainly localized in the mucosa and in the limitrophic zones of the neostomy. These inflammations subside in time and the necrosis of the mucosa appearing toward the fiftieth day is replaced three months after operation by a regeneration, hyperplastic in type, coming from the zones of the adjacent healthy mucosa. Biliary derivations, however, influenced by the mechanism of the histologic changes and the presence of bacterial stimuli and toxic irritants in the gallbladder, should be considered a favorable ground for the initiation of inflammatory processes due to micro-organisms from other parts of the organism.

Dermatologische Zeitschrift, Berlin

68: 177-240 (Jan.) 1934

Therapeutic Investigations and Processes of Spontaneous Cure in Gonorrhea. A. Proppe.—p. 177.
Nature of Pityriasis Rosea. P. Photinos.—p. 187.
Pityriasis Rubra Pilaris. W. Schilling.—p. 190.
*Rare Complication Following Injection of Neoarsphenamine. L. S. Sirota.—p. 198.
Predisposition in Herpes Transferred by Inoculation, with Consideration of Sex, Age, Temperature and Blood Groups. H. Hruszek.—p. 200.

Rare Complication Following Injection of Neoarsphenamine.—Sirota points out that in sensitized patients the intravenous injection of neoarsphenamine may produce pains in the region of the sacrum and coccyx with stiffness in the back. The manifestation can be classified with the group of angioneurotic syndromes. It appears that a preliminary subcutaneous injection of epinephrine (1 cc. of 1:1,000) is effective in preventing the complication. The small number of cases that have been observed so far do not permit an explanation of the nature of the disturbance, but it is possible that sensitization plays a part.

Klinische Wochenschrift, Berlin

13: 81-120 (Jan. 20) 1934

Catatonic and Striatal Disturbances. W. Kirschbaum.—p. 81.
*Insulin-Sugar Therapy in Experimental Hypophyseal Hyperthyroidism. A. Loeser.—p. 83.
Antipyretic Action of Digitalis Substances. L. Lendle.—p. 86.
*Coagulation Time and Ovarian Function. H. Küstner and H. Schulz. —p. 87.
*Changes in ST Interval of Electrocardiogram Following Exertion: Significance for Estimation of Cardiac Function. A. von Mentzingen.—p. 88.
Changes in Anterior Lobe of Hypophysis and Ovary Following Treatment with Large Doses of Follicle Hormone. W. Hohlweg.—p. 92.
Investigations on Modification of Serum Cholesterol by Vitamin A. H. J. Jusatz.—p. 95.
Micromethod for Thrombocyte Count. R. Jürgens.—p. 97.
Meinicke Clarification Reaction II in Cerebrospinal Fluid. P. Dahr.—p. 99.
Influence of Corpus Luteum on Glycogen Content of Liver. E. Engelhart and O. Riml.—p. 101.
Insulin Spasms and Reticulo-Endothelial System. L. Dünner, B. Ostertag and H. Lücke.—p. 101.
Nature of Retarded Blood Coagulation in Jaundice Due to Obstruction. A. Bartik.—p. 102.
Treatment of Strychnine Poisoning. A. K. J. Koumans.—p. 103.

Insulin-Sugar Therapy in Experimental Hypophyseal Hyperthyroidism.—Loeser reports the results of the simultaneous administration of the thyrotropic substance of the anterior hypophysis and of large doses of carbohydrate and the effects of insulin and sugar on the glycogen content of the hyperthyroidized liver. The experiments were made on guinea-pigs. He found that the glycogen deficiency of the liver produced by the increased activity of the thyroid reaches its maximum on the eleventh day of the injections of the thyrotropic substance. At this time the liver is practically free from glycogen. The simultaneous administration of large doses of carbohydrate (levulose) does not compensate for the loss of glycogen by the liver. Administration of insulin and sugar to hyperthyroidized animals restores the glycogen supply of the liver. The author thinks that the compensation of the glycogen deficiency following treatment with insulin and sugar makes it appear possible that the change in the carbohydrate metabolism is to be found not in the hyperthyroidized liver alone but perhaps also in the pancreas and in the suprarenal system. The insular apparatus of the pancreas showed no morphologic changes indicative of such an assumption. However, recent investigations indicated that a hypertrophy of the suprarenal cortex always accompanies the experimental hyperthyroidism.

Coagulation Time and Ovarian Function.—Küstner and Schulz demonstrate that irradiation with red light rays produces changes in the otherwise rather constant blood coagulation time. Since the changes do not develop in the absence of the ovaries, they cannot be the result of a direct action on the blood but must be accomplished by way of the ovaries. On the other hand, the change in the coagulation time following irradiation with red light rays presents a biologic test for the function of the ovaries, for only adequately functioning ovaries lead to a prolongation of the coagulation time. Thus, a prolonged coagulation following irradiation with red light rays indicates normal function and reactivity of the ovaries, whereas an unchanged coagulation time indicates deficient or entirely lacking ovarian function. The authors point out that this is a further proof for the great significance of the red rays for the biology of the incretory glands.

Changes in ST Interval Following Exertion.—Von Mentzingen describes the changes in the ST interval of patients and of normal persons following the exertion of bending the knees ten times. She found that a leveling of this deflection indicates a functional and occasionally a reversible cardiac impairment and that the negativity of this wave generally indicates a severe lesion produced by a true myocarditis. A heightening of the T wave is extremely rare following the work test and does not permit a definite interpretation.

13: 121-160 (Jan. 27) 1934

Results and Problems of Research on Porphyrin. H. T. Schreus.—p. 121.
*Best and Most Economic Treatment of Pernicious Anemia. K. Franke. —p. 127.
*Nycturia as Symptom of Central Nervous Disturbances. A. Jores.—p. 130.
Sporadic Occurrence of Weil's Disease. F. Krause and W. Wilken. —p. 132.
Action of Injection of Prolan on Hypophysis of Male Animals. G. Bergman.—p. 136.
Benign Familial Spontaneous Pneumothorax. P. Müller.—p. 137.
Pathogenesis and Clinical Aspects of Nontropical Sprue (Fat Resorption Disease). L. Dunner, H. Hirschfeld and M. Geraldy.—p. 138.
Hormonic Modification of Sex in Dogs. W. Koch.—p. 141.
Insulin Action in Severe Disturbance of Lipoid Metabolism. D. Matrossowitsch.—p. 143.
Influence of Radon on Sympathetic Nervous System: Determination by Epinephrine Probe Test. Muck.—p. 145.
Suprarenal Cortex and Luteinization. K. A. Winter, M. Reiss and J. Bálint.—p. 146.
Production of Diphtheria Toxin. G. Scheff and Irene P. Scheff.—p. 146.
Compulsion to Undergo Operation. R. Cordes.—p. 147.
Thrombocyte Count—a Clinical Method? E. Kaufmann.—p. 158.

Economic Treatment of Pernicious Anemia.—Franke compares the results obtained with fresh liver, liver preparations and stomach preparations in the treatment of 118 patients having pernicious anemia with the efficacy of arsenic and of blood transfusions in sixty-three patients. He reaches the conclusion that the most effective treatment, particularly in the most severe forms, is the combined use of liver juice and stomach juice. It requires only half the time needed by treatment with liver juice only, with liver and blood transfusion or with injection of liver extracts. The most suitable measure to retain the normalized condition (more than four million erythrocytes) is one weekly injection of from 5 to 10 cc. of liver extract and daily oral medication with 3 Gm. of reduced iron. The author recommends the medication with iron during the continuous treatment because of the favorable effect on the general condition and on the nervous disorders, and because many patients cannot be kept above the four million mark without the administration of iron. Stomach preparations alone did not meet the requirements more effectively than orally administered liver preparations. The author compares the cost of the various methods of treatment. He shows that liver treatment alone requires much more time and consequently is almost twice as expensive as the combined liver and stomach treatment. For the continuous treatment, liver and iron is much less expensive than is the use of fresh liver alone.

Nycturia as Symptom of Central Nervous Disturbances.—Jores designates as nycturia the condition in which the quantity of night urine is greater than that which is eliminated during the day. In a former report he had proved that, particularly in patients with cardiac and renal disorders, nycturia, the inverse type of water elimination, is extraordinarily frequent. However, observations on a large number of patients revealed that nycturia may also exist in the absence of cardiac and renal disturbances. He relates the clinical histories of three patients, which indicate that nycturia concurs with sleep disturbances, particularly of the narcoleptic or epileptic type. He mentions two patients with emaciation, lack of specific dynamic action, polyuria and high sodium chloride content of the urine, in whom disturbances in the sympathetic regulation of the hypophyseal-mesencephalic system were diagnosed. These cases indicate that the cause of the inverse type of urine elimination is to be found in the mesencephalon. The author shows that the majority of patients with gastric ulcer have nycturia, and in this connection he points out that, in patients with ulcer, disturbances of the sympathetic regulation, particularly in the form of vagotony, play an important part. He cites another case, in which vagotonic symptoms concurred with nycturia, and in summarizing the different observations he emphasizes once more that the inverse type of water elimination, nycturia, is caused by a disturbance in the hypophyseal mesencephalic system.

Medizinische Klinik, Berlin

30: 41-76 (Jan. 12) 1934. Partial Index

Significance of Heredity in Orthopedics. G. Brandt.—p. 41.
Diagnosis and Therapy of Gastro-Intestinal Diseases. C. von Noorden.—p. 43.
*Is There an Active Immunity in Syphilis? W. Kolle and R. Prigge.—p. 46.
*Local Myxedema in Exophthalmic Goiter. L. Arzt.—p. 49.
Infectious Toxic Exanthem Resembling Erythema Exudativum Multiforme. O. Grütz.—p. 52.
Chronic Enterococcic Inflammation of Lung. H. Gerhartz.—p. 54.
Dietary Treatment in Gynecology and Obstetrics. A. Bauer.—p. 58.

Active Immunity in Syphilis.—Kolle and Prigge point out that the problem of immunity against syphilis is not solved. They show that symptomless infection, that is, general infection without the formation of primary lesions, plays an important part in this problem. The transmission of glandular material by inoculation is the only way to demonstrate the symptomless infection. The authors made systematic tests on syphilitic rabbits subjected to an intense arsphenamine treatment during either the early or the late period to determine whether the lack of development of a primary lesion is the sign of a local cutaneous immunity (chancre immunity) or of a true general immunity. One group of infected animals were subjected to arsphenamine therapy from three to eight months following infection. After completion of the arsphenamine treatment they were left alone for six months and then were exposed to reinfection. From six to eight months after this, their lymph nodes and testes were extirpated and inoculated into new animals. The controls were syphilitic animals that received arsphenamine therapy just like the animals of the first group; after the corresponding period they were not treated with syphilitic material but with normal material. These experiments proved that there is a chancre immunity but no true general immunity. The method of experimentation chosen by the authors also indicates how Chesney arrived at his erroneous conclusion that a true active immunity develops in syphilis. Chesney performed the reinfection too soon after the arsphenamine therapy, for the elimination of arsphenamine is drawn out over considerable periods and the arsphenamine still present shortly after the treatment prevents the multiplication of newly introduced spirochetes. The second cause of Chesney's erroneous results is that he transplanted the glandular material too soon after the reinfection. The authors point out that the absence of true immunity to syphilis refutes the objection that chemotherapy during the incipient period prevents the development of an immunity. There never exists such an immunity during an early or the late period.

Local Myxedema in Exophthalmic Goiter.—Arzt reports the history of a woman who developed broad-based, firm tumors with a papillary surface on the extensor aspects of the legs. The histologic picture indicated that the tumors were a local myxedema. The protrusion of the eyes and the statement that she underwent an operation for exophthalmic goiter led the author to classify the case with the cases described by Wilhelm Richter as local myxedema in exophthalmic goiter.

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Blood Disturbances in Their Relations to Otorhinolaryngologic Disorders. R. Schmidt.—p. 77.
Allergic, Parallergic and Nonallergic Pathergy. E. Urbach.—p. 80.
*Occurrence of Urea in Blood and in Cerebrospinal Fluid. W. Leipold.—p. 85.
Closure Mechanism of Bladder and Rectum. F. Dietel.—p. 87.
Two Cutaneous Carcinomas of Unusual Form and Genesis. H. Höltkemeier.—p. 88.
*Stained Flocculation Reactions. H. Hecht.—p. 90.
Dietary Treatment in Gynecology and Obstetrics. A. Bauer.—p. 91.
Pipet Apparatus for Examination of Blood, Which Excludes Danger of Contagion. C. Bienias.—p. 94.
Death as Result of Prolonged Cardiorenal Disease or of Accident? H. Engel.—p. 95.

Urea in Blood and in Cerebrospinal Fluid.—Leipold shows that under physiologic conditions the urea content of the blood and that of the cerebrospinal fluid vary in individual cases. In the blood, the values fluctuate between 17 and 56 mg. per hundred cubic centimeters and in the cerebrospinal fluid between 13 and 48 mg. The urea content of the cerebrospinal fluid is largely dependent on the urea content of the blood. However, the blood is not the only source of the urea found in the cerebrospinal fluid. Under certain conditions it is probable that at least a portion of the urea demonstrable in the cerebrospinal fluid is produced in the cerebrospinal fluid itself or in the central nervous system. Under physiologic conditions the cerebrospinal fluid generally contains less urea than the blood, as a rule about 85 per cent. The percentage increases in case of disturbances in the cerebrospinal fluid and decreases again as the condition improves. This observation, however, is of only theoretical significance. It does not permit conclusions about the existence of pathologic processes in the central nervous system, nor can it be utilized for the prognosis.

Stained Flocculation Reactions.—Hecht points out that, since the flocculation reactions are based on colloid chemical processes, the introduction of dye colloids could be tried in order to make the flocculation not only more clear but also more voluminous. The aim of his research was to devise a flocculation reaction in which the precipitating extract carries a portion of the dye along, so that, in case of a positive reaction, the fluid that remains after flocculation would be colored differently from that in a negative reaction (in not precipitated extract). The experiments were made primarily on the conglobation reaction of Hecht and Müller. However, the results indicate that they can be made on all flocculation tests of syphilis which employ alcoholic extracts without the addition of balsam (Sachs-Georgi reaction, Kahn reaction and so on). The method consists (1) in a selective staining of the extract with a dye that, following precipitation of the colloid extract, leaves the remaining fluid uncolored, and (2) in a contrast staining of the sodium chloride solution (fluid free from extract) with dyes that stain the colloid extract only slightly or not at all. Of the numerous lipoid stains, sudan III was the only one that proved suitable. The concentration of the stain is determined by means of titration. Sudan is introduced in a powder bottle containing the extract. After shaking, the mixture is left to stand, and thus a saturated extract dye solution is obtained. Then the Hecht-Müller conglobation reaction is done according to the usual technic by setting up the undiluted stained extract and also dilutions of the stained extract with the unstained extract in various ratios:

Stained extract	5 cc.	4 cc.	3 cc.	2 cc.
Unstained extract	1 cc.	1 cc.	1 cc.	1 cc.

With this model it is easy to find the dilution in which the extract, in case of a positive reaction, contains sufficient dye taken up by the precipitate so that the fluid is completely or almost completely clear, whereas in the nonflocculated extract (negative reaction) a reddish fluid is observable. As contrast stains, numerous dyes nonsoluble for fats can be used. Among others the author mentions Löffler's methylene blue. Here likewise titration is advisable. The stained sodium chloride solution should contain only so much contrast dye that during mixture with the dyed extract it does not reveal its own stain.

If in case of positive reaction the red stained extract is concentrated in the conglobate, the contrast stain must be clearly visible, whereas, in case of negative reaction, there usually is a turbid fluid. The reaction should be read against a white background.

Münchener medizinische Wochenschrift, Munich

81: 41-78 (Jan. 12) 1934

*Treatment of Organic Esophageal Stenoses and of Cardiospasm. G. Lotheissen.—p. 41.
*Compression of Thorax, New Sign for Threatening Progress of Scoliosis. K. Bragard.—p. 45.
Tasks of Pathology in Eugenics and Race Research. E. Hammer.—p. 46.
Observations on Action of Nicotine on Blood Pressure and Pulse Rate. H. von Hoesslin.—p. 48.
New System of Silver Antisepsis and Chlorine Disinfection. W. Kruse and M. Fischer.—p. 49.
Recent Forms of Addiction. F. M. Meyer.—p. 51.
Fundamental Differences in Modern Psychoanalysis (Freud, Adler, Jung). E. Heun.—p. 52.
Treatment of Hyperthyroidism or of Exophthalmic Goiter with Thyreoid Katechin (Antihormonic Substance). E. Baumann.—p. 57.
Effective Principle of Organ Extracts for Treatment of Vascular Spasms. Tiemann.—p. 58.
Improvised Siderroscope. Drenkhahn.—p. 59.
Hundred Years Ago in Laboratory of Johannes Müller. F. Bidder.—p. 60.

Treatment of Esophageal Stenoses and of Cardiospasm.—Lotheissen recommends progressive dilation for the treatment of cicatricial strictures of the esophagus, which frequently develop following corrosion with acids or other caustics. He states that in cases in which dilation fails esophagoplasty can be done, but he found that this is rarely necessary. He discusses strictures caused by tumors. Benign neoplasms, such as wartlike papillomas and myomas, rarely cause disturbances; only fibromas and lipomas occasionally become large enough to obstruct the esophagus. They can generally be detected by roentgenoscopy or esophagoscopy. In the course of esophagoscopy, pedicled polyps can usually be removed by means of the galvanocautery. In cancer of the esophagus, surgical removal is still the most reliable therapeutic method. The removal is comparatively easy only if the growth is in the cervical portion. Here the defect can be repaired by esophagoplasty. Because of a tendency to metastases, the results are not often permanent. The majority of esophageal cancers develop within the thoracic cavity, and the results of resection are poor. By gradual dilation it is frequently possible to improve deglutition at least temporarily. If the patient refuses a gastric fistula, the use of the catheter may become necessary; but the latter procedure may cause undesirable hemorrhages and even may accelerate the growth of the cancer. Irradiation has not been very successful in the treatment of esophageal cancers. For the alleviation of pain the author recommends medication with silver nitrate. If thick mucus accumulates above the stricture and troubles the patient, a tablespoonful of a 1:100 solution of sodium bicarbonate will make it more fluid, so that it will pass the stenosis. In case of painful deglutition an anesthetizing solution can be swallowed five minutes before eating. Spastic conditions of the esophagus, particularly cardiospasm, are much more amenable to treatment than are the organic stenoses. Cardiospasm becomes manifest during food intake and is the result of a disturbance in the innervation. Antispasmodics are helpful, but more important is the local treatment. Dilation instruments employing balloons are sometimes employed. The author evaluates several surgical methods, but he thinks that nonsurgical dilation should always be tried first.

Method for Detecting Tendency to Scoliosis.—Bragard mentions symptoms such as fatigue after physical exercise, myogelosis in the erector spinae muscles, anemia and a tendency to sweating as frequently indicative of progressive scoliosis and describes a method that permits early detection of a tendency to scoliosis by testing the compression pain of the thorax. The patient lies on his back with the hands under his head and takes a deep breath. During expiration the examiner presses both hands forcefully to both sides of the thorax. In older children the hands are first applied to the side of the upper and middle ribs, which means obliquely to the course of the ribs, and then the procedure is repeated over the middle and lower ribs, which are pressed almost transversely. Then the patient is turned to the side, and each half of the thorax is compressed. Again the hands are pressed obliquely, almost transversely to the course of the ribs. The hand that presses the back is at a slightly higher level, so that pressure and counterpressure strike the same ribs. The procedure must be repeated over the lower ribs if necessary. A healthy person experiences no discomfort from the compression of the thorax, provided he breathes properly. Persons who are threatened by progressive scoliosis complain of pain, which in high bilateral compression appears particularly in the costal cartilages along the sternum. If pressure is exerted lower down, the pain is most intense in the anterior axillary line. Pain on compression of the ribs between the fifth and the tenth is most significant. In unilateral compression the patients frequently state that one side hurts more than the other, the convex side more in the case of slight curvature and the concave side more in severe deformity of the thorax. The author thinks that the phenomenon is due to the bending of the ribs that have become elastic.

81: 79-116 (Jan. 19) 1934

Foundations of Practical Therapy. L. von Krehl.—p. 83.
Changes in Eye Produced by Senility. F. Schieck.—p. 85.
Diagnosis and Differential Diagnosis of Renal Tumors. R. Demel.—p. 87.
*Tonsillectomy in Endocarditis. F. Curtius, W. Dieker and E. Wirth.—p. 89.
Posttraumatic Pareses in Region of Posterior Bundle of Brachial Plexus. J. Hempel.—p. 93.
*Scarlet Fever Blanching Phenomenon. W. Wieck.—p. 94.
Bothriocephalus Latus Intoxication: Special Case. H. Schwennicke.—p. 96.
Connection Between Bronchial Asthma and Weather. A. Evers and H. Schultz.—p. 97.
Pipetting Secured Against Return Flow: New Apparatus. F. P. Leusden.—p. 100.
Is Meinicke Clarification Reaction II Sufficient as Only Syphilis Reaction in Hospital? E. Meinicke.—p. 100.

Tonsillectomy in Endocarditis.—Curtius and his associates performed tonsillectomy on forty-one patients with endocarditis. In twenty-nine they removed the tonsils during the nonfebrile interval and in twelve during the acute attack. They found that tonsillectomy is readily accomplished during the acute attack, although hemorrhages and postoperative increases of temperature are more frequent than is the case in operations during the interval. Bacteriologic examination of the tonsils revealed hemolytic streptococci, particularly in the septic forms of the disease. In a case of endocarditis lenta in which Streptococcus viridans was demonstrated in the blood, this organism was not demonstrable in the tonsils. In two patients with endocarditis lenta, neither the blood nor the tonsils contained pathogenic micro-organisms. The tonsillar micro-organisms of two patients were examined for cardiotropic behavior, but such behavior could not be proved. Of twenty-three surviving patients who were reexamined later, only three complained of occasional difficulties in swallowing and of throat irritation. These symptoms were probably caused by nasal abnormalities that existed previous to the tonsillectomy. In cases of this type, disorders of the nose should be corrected. In eight cases of endocarditis lenta the tonsillectomy neither retarded nor checked the fatal course. Thirteen of twenty-three patients with endocarditis showed a disappearance of the cardiac symptoms together with the pharyngeal symptoms. Septic and rheumatic manifestations were favorably influenced in fourteen patients. In febrile florid endocarditis, tonsillectomy brought no advantages, and the authors think that it should be done during the interval, when the patient is free from fever. They observed that existing cardiac lesions often improved after tonsillectomy. However, they found that, if signs of decompensation existed before tonsillectomy was done, a continuous exacerbation may be expected. Involvement of the kidneys is no contraindication to tonsillectomy, but the renal symptoms as a rule were only slightly influenced by it. The subjective condition of the patients with endocarditis improved generally to the extent that the cardiac and pharyngeal symptoms improved. A discrepancy between the subjective and objective aspects could be traced in two patients to psychic factors.

Scarlet Fever Blanching Phenomenon.—Wieck shows that the blanching phenomenon is a great help in the diagnosis of scarlet fever, and he thinks that this test should be made in every case. However, to perform it with the scarlet fever antistreptococcus serum involves dangers due to the allergizing factor of the horse serum. There is the possibility of perform-

ing it with convalescent serum, but, since the patients are usually children, the withdrawal of sufficient amounts of serum meets with difficulties. The third possibility is the use of normal serum. The fact that with increasing age there is a considerable increase in negative Dick reactions was an inducement to study the serums of older persons for their blanching capacity. The author obtained serums of thirty-seven persons, aged 40 or more, and he found that, even though they had not had scarlet fever, their serum had an intense blanching capacity. The results obtained with these serums were superior to those produced with convalescent serum or with scarlet fever anti-streptococcus serum. A particular advantage of the normal serum is that it is obtainable in practically unrestricted quantities.

Zentralblatt für Gynäkologie, Leipzig

58: 145-192 (Jan. 20) 1934

Involvement of Fetal Tissues in Uterus in Experimental Hypersusceptibility to Protein. E. Junghans and H. Girgensohn.—p. 177.
*Curative Action of Iodized Oil Filling of Uterus and Tubes in Sterile Women. G. K. F. Schultze.—p. 180.

Curative Action of Iodized Oil in Tubes in Sterile Women.—The introduction of iodized oil into the uterus and the tubes of sterile women is resorted to primarily for diagnostic purposes, but Schultze shows that in a considerable number of cases it has also a therapeutic effect. He admits that in sterility the estimation of therapeutic results is difficult and that a critical attitude is necessary if self deception is to be avoided. However, he is convinced that in twenty-one cases, or in 13 per cent of those in which roentgenoscopy revealed that one or both tubes were passable, a causal connection must be assumed between the filling with iodized oil and the subsequent pregnancy. He discusses the factors that play a part in the therapeutic action of the iodized oil filling. It is probable that the introduction of the contrast medium presents a sort of fluid probing of the cervical canal. Moreover, the dilation of the uterine cavity, effected by the contrast filling, may play a part. But the author thinks that the therapeutic action of the contrast medium is due primarily to the action on the tubes. Certain observations seem to indicate that the iodized oil influences the function of the tubes by stimulating the peristaltic action.

58: 193-240 (Jan. 27) 1934

*Malignant Granulosa Cell Tumor and Premature Sexual Development. E. Klaften.—p. 204.
Leiomyoma of Small Intestine. J. S. Shapiro.—p. 215.
*New Surgical Method for Treatment of Prolapse. F. Kovacs.—p. 218.
Formation of Artificial Vagina with Rectal Method According to Mandelstamm's Modification (Eight Further Cases). A. Mandelstamm.—p. 222.
Twilight Sleep Induced with Dilaudid-Scopolamine in Operative Gynecology. F. Jost.—p. 228.
Pregnancy in Tubal Stump: Two Cases. O. von Schroeder.—p. 231.

Malignant Granulosa Cell Tumor and Premature Sexual Development.—Klaften states that 48.7 per cent of granulosa cell tumors occur in women of the child-bearing period, 42.5 per cent in women of the menopausal age and 8.7 per cent in children of the prepuberal age. In a case observed by him, of a girl, aged 9, he points out that, if the relations between sexual prematurity and the granulosa cell tumors are studied, two possibilities should be considered. There is the possibility of a constitutional sexual prematurity, which occasionally is heredofamilial and is caused by a genotypically precipitated growth impulse. In such cases of constitutional prematurity a granulosa cell tumor, as the result of a tissue anomaly in the form of a malformation of the granulosa epithelium, may become manifest as a coordinated symptom. The second possibility is the premature development of the sexual apparatus as the result of the incretory action of the granulosa cell tumor in persons with otherwise normal growth impulses. Aside from the heredofamilial occurrence of the first form, the two types differ in that in the first the signs of sexual prematurity persist and develop further after extirpation of the tumor, while in the patients in whom the sexual prematurity is the result of the incretory action of the tumor it either disappears or at least does not develop further, provided there is no relapse. In the author's case the secondary sex characters were fully developed, but there was no indication of a heredofamilial predisposition to sexual prematurity.

Surgical Treatment of Prolapse.—The method described by Kovacs is based on the principle of median colporrhaphy. In the first stage of the operation, he resects from the posterior and anterior vaginal walls, in transverse direction and 1 cm. away from the external uterine opening, mucous membrane flaps, which measure 2 cm. on the narrow side and 3 cm. on the wide side and approach the rim to within 1 cm. Each flap terminates laterally upward in a sagittal ⌋ or ⌊ shaped strip of from 1.5 to 2 cm. in width, which in turn slants off into a point that is directed outward and ends in the external and median third of the vaginal wall. The two flaps are exact reflections of each other. The wound surfaces that have been formed in this fashion are joined in their entire length with knotted catgut threads, and the prolapse is eliminated. There remain, on the one side of the septum, a vagina of normal width but shorter by 3.5 cm. and, on the other side, a vaginal canal the width of a pencil, and also small cystoceles and rectoceles. The second phase of the operation consists in a thorough anterior but particularly posterior plastic repair. By means of reconstruction of the perineum and by curving the vaginal axis so that the concavity is directed forward, not only the cystoceles and rectoceles are eliminated but the vaginal orifice is narrowed. Moreover, at its external end the vagina is lengthened to the same extent it had been shortened by the septum in front of the mouth of the uterus. The anterior concavity of the vaginal tube, produced by the repair of the perineum, places the intra-abdominal pressure on the newly formed, muscular perineum instead of on the vulvar slit, and thus the action of the vaginal septum is reenforced. The operation produces on one side of the septum a vaginal tube of normal width and length, and on the other side there remains a narrow canal. The discharge of uterine and vaginal secretions is possible through both. Between the vaginal part of the uterus and the transverse septum there remains a transverse canal, which opens into both tubes. The author performed this operation on fourteen patients and generally obtained excellent results. The operation may be performed on women of all ages, but it is particularly advantageous for younger women, for the cohabitation capacity is retained and even conception is still possible. Pregnancy can be carried to term, but delivery must of course be done by cesarean section.

Sovetskaya Khirurgiya, Moscow

3: 1-116 (No. 4) 1933

Stones in Liver. I. G. Rufanov.—p. 3.
*Functional Treatment of Compression Fractures of Vertebrae. V. Gorinevskaya and T. F. Dreving.—p. 13.
Cervical Ribs and Their Clinical Significance. S. L. Doshoyants and E. V. Loskutova.—p. 36.
*Blood Platelets in Purulent Infection. E. M. Girdin-Finkinshteyn.—p. 46.
Question of Hemorrhage from Corpus Luteum into Peritoneal Cavity. A. G. Butylin.—p. 62.
Wrist of Smith, Hammerer and Locksmith. B. V. Dmitriev.—p. 71.
Symptoms and Operative Treatment of Cysticercus of Brain. G. P. Kornyanskiy.—p. 81.
Methods of Operating on Cysts of Upper Jaw: Clinical Evaluation. V. A. Aronson.—p. 91.

Functional Treatment of Compression Fractures of Vertebrae.—Gorinevskaya and Dreving state that compression fractures of vertebrae constitute a characteristic trauma of workers engaged in building trades and as such demand special preventive measures. Complete restitution to full working capacity takes place in the majority of cases if correct treatment is applied. Cases complicated by total crushing of the spinal cord are utterly hopeless but constitute not more than one sixth of all cases. The author considers prolonged immobilization in plaster of paris or leather jackets faulty, because it leads to atrophy of the bones, muscles and joints and thus prolongs the disability. A compression fracture of a vertebra is essentially an impacted fracture and Behler's suggestion that it be reduced does not accomplish its aim. The correct method from a physiologic point of view consists of systematic and methodical movements with due regard for the character of the fracture, the age, the occupation and the general condition of the patient. All exercises are carried out in the beginning in a horizontal position on an inclined plane. The movements consist of general physical exercises, which aim at strengthening of the muscles and improving the respiration and circulation. Special corrective exercises to strengthen the muscles of the spine, particularly

the extensors, are gradually added. The exercises are carried out according to a definite plan, with a definite dosage and a gradual increase in force and duration, training the patient to hold his vertebral column in a vertical position, to walk and to work. This method of functional treatment shortens considerably the period of disability. Massage and physical therapy are valuable aids in the functional treatment.

Blood Platelets in Purulent Infection.—Girdin-Finkinshteyn found that infection is accompanied by oscillation in the number of blood platelets. This oscillation from the onset of the infection and following surgical intervention up to recovery is characterized by a certain regularity. It is influenced by the character, the course, the clinical picture and the outcome of the disease process. The blood platelet curve in acute purulent infection with a favorable course terminating in recovery is typical and is made up, after the operation, of two components, a rise followed later by diminution in the count down to normal. In a rapidly approaching lethal termination the platelet count falls abruptly and remains at a low level. In grave infections with alternating improvements and exacerbations terminating in death, the number of platelets falls with exacerbations and rises with improvement, the fall in the count always coinciding with the appearance of grave clinical manifestations. The more acute the course of infection, the steeper the curve. Purulent infection was found to be accompanied by thrombocytosis in 80 per cent. The author found giant and tail-shaped forms in the majority of his patients. The two bore a proportional relation to the total number. These forms were found rising with the improvement in the disease process, falling with exacerbation and disappearing shortly before death. The number of giant and tail-shaped cells diminishes gradually as the patient recovers from the infection. The author concludes that the blood platelet count offers one more method of estimating the reaction of an organism to a purulent infection. A typical blood platelet curve with a typical change in the number of giant and tail-shaped cells points to a favorable outcome. Diminution in the count and disappearance of tail-shaped cells points to the gravity of the disease process. A sudden fall in blood platelets followed by persistent thrombopenia and disappearance of tail-shaped cells is indicative of the severity of the infection.

Finska Läkaresällskapets Handlingar, Helsingfors

76: 1-103 (Jan.) 1934

*Roentgen Symptom in Diverticulosis and Diverticulitis of Colon. G. Jansson.—p. 1.
*Contribution to Question of Irritant Effect of Iodized Oils in Subarachnoid Space. E. Ruin.—p. 15.
Ileus Due to Foreign Bodies: Two Cases. C. V. Sandelin.—p. 22.
Bronchial Asthma, with Especial Regard to Allergic Form. Zaida Eriksson.—p. 29.
*Plastic Surgery for Pendulous Breasts. G. A. Björkenheim.—p. 57.

Roentgen Symptom in Diverticulitis of Colon.—In Jansson's case a pseudotumor had developed on the basis of a peridiverticulitis and perisigmoiditis. Careful roentgen examination is, he says, the only means of certain diagnosis in diverticulosis of the colon, and irrigoradioscopy, well carried out, is undoubtedly the best method; it is important that the contrast substance, which should be a thick fluid, be allowed to lie in the colon for one or two hours, so that the pouches may fill gradually. If diverticulitis accompanies the diverticulosis, the inflammatory process often extends to the mucous membrane of the colon, causing changes in the mucous membrane relief and rigidity in the intestine. Diverticulitis seldom leads to cancer formation. When in case of tumor in the sigmoid flexure typical pouches are seen in the roentgenogram, with characteristic changes in the mucous membrane relief, and nutrition and appetite are good, the indications point to an inflammatory tumor due to diverticular sigmoiditis and perisigmoiditis.

Irritant Effect of Iodized Oils in Subarachnoid Space.—Following myelography in Ruin's case of chronic adhesive arachnoiditis, in which a 40 per cent iodized oil (iodipin) was used, paralysis affecting the rectum, bladder and left lower extremity occurred; the patient could not be discharged as tolerably recovered until four months after the myelography.

Plastic Surgery for Pendulous Breasts.—After treating of the various operative methods for pendulous breasts, Björkenheim describes his case treated according to Joseph's second method. Sixteen days elapsed between the two sittings, and on resection 1,400 Gm. of tissue was removed from the breasts. The intervention was well borne and recovery uneventful.

Hospitalstidende, Copenhagen

77: 29-56 (Jan. 9) 1934

*Investigations on Intestinal Peristalsis Observed Through Window in Abdominal Wall. E. Schnohr.—p. 29.
Outfit of Urologic Instruments. O. Keller.—p. 47.

Study of Intestinal Peristalsis.—Schnohr inserted an oval cellophane window in the abdominal wall of twelve rabbits; when killed from two to three weeks later, the animals were perfectly well. In anoxemia or increased carbon dioxide concentration in the blood, violent contraction of the arteries in the intestine was seen, accompanied by immediate stopping of all intestinal movement. Solution of pituitary preparations repeatedly produced a peristalsis more violent than the normal intestinal contraction, of an uncoordinated, unphysiologic kind and of very short duration. Intravenous or intracardial hypertonic salt solutions (from 7 to 25 per cent) were usually able to produce in the paralyzed intestine long-continued peristalsis of the same nature as the normal intestinal movements. The importance of this effect in the treatment of paralytic ileus is emphasized.

77: 57-84 (Jan. 16) 1934

*Kienböck's Diseases Treated with Extirpation of Os Lunatum: Fourteen Cases. A. Ringsted.—p. 57.
*Pulsation in Right Carotid Artery in Arterial Hypertension. J. E. Holst.—p. 79.

Kienböck's Disease Treated with Extirpation of Os Lunatum.—In Ringsted's thirteen cases of Kienböck's disease, one bilateral, examination from nine months to six years after operation shows that eight are well, three improved and three unchanged. The technic used consisted in dorsal removal of the semilunar bone, scraping off the cartilage of the bones articulating with the semilunar and transplantation of a sterile bone graft from the femur to the cavity.

Pulsation in Right Carotid Artery in Arterial Hypertension.—Holst says that in a number of cases of arterial hypertension an abnormal pulsation arising from the common carotid artery is seen, either only on the right side of the neck or far more marked on the right side than on the left. He cites the seven cases found in the literature (Brown and Rountree, five and Beardwood, two) and reports two personal cases; of the nine cases, eight were in women. A shifting upward of the arch of the aorta and thus of the arterial branches originating from the arch leads to a reduction of the space between the two ends of the carotid, with consequent folding of the carotid and, in certain cases, formation of an angular kind; the unilateral nature of the phenomenon depends on special conditions affecting the carotid on the right side.

Ugeskrift for Læger, Copenhagen

96: 59-86 (Jan. 18) 1934

*Significance of Athletic Exercises for Menstruation and Delivery: Review. K. Secher.—p. 59.
Determination of Quinine-Resistant Lipases in Serum: Remarks on Technic and Sources of Error in Same. V. Genner.—p. 63.
Remarks on Artificial Respiration According to Holger Nielsen's Method. J. Lindhard.—p. 67.

Athletic Exercises for Menstruation and Delivery.—Secher summarizes as follows: 1. Apart from quite exceptional cases, athletic exercises usually are without harmful effect on the menstrual process. 2. Sometimes they have a marked favorable influence on certain forms of pain accompanying the process. 3. Physical exercises, except swimming, during menstruation seem to be safe, although competitive exercises should be avoided at this time, but there are pronounced individual differences and especially during the first two days athletic exercises should be avoided if there is attendant discomfort. 4. There is no evidence pointing to any really unfavorable effect of athletics on delivery. 5. Athletics, especially in the more strenuous form such as training for competitive sports, should be practiced only by perfectly healthy women, and disorders in the pelvic region particularly should be excluded. Physical exercises during the menopause are advised, as the increased activity of the organism apparently lessens the climacteric difficulties considerably.